

HIV Sentinel Sero-surveillance Survey Report, 2012

National AIDS Programme, Department of Health, Ministry of Health
Myanmar



Table of Contents

Table of Contents	2
Acknowledgement	3
List of abbreviations	6
List of townships implementing HIV Sentinel sero-surveillance, 2012	7
1. Background	8
2. HIV Antibody Testing	8
3. Data analysis	9
4. Findings	9
4.1. Sample collection	9
4.2. HIV prevalence by sentinel population	10
4.3. HIV prevalence by sex and age among sentinel population	13
4.4. HIV prevalence by place of residence and marital status	15
4.5. HIV prevalence by exposure time on risk behavior	17
4.6. Results of syphilis screening	18
5. HIV trends over time	22
5.1. HIV prevalence among sentinel groups 1992-2012	22
5.2. HIV prevalence among young population	27
6. Recommendation	29
6.1. Recommendations for programme implementation	29
6.2. Recommendations for surveillance	29
7. Annexes	31
7.1. Annex 1: Total number of blood sample collected (n) and HIV prevalence (%) by sentinel population and sites, HSS 2012	31
7.2. Annex 2: HIV prevalence by age groups, HSS 2012	33
7.3. Annex 3: Prevalence of syphilis (VDRL+) by sentinel population and by sites, HSS 2012	34

List of Tables

Table 1:	Number of sentinel sites and sample size for each sentinel group, HSS 2012	8
Table 2:	Comparison between the required and achieved sample size among different sentinel population groups, HSS 2012	9
Table 3:	HIV prevalence among sentinel populations, HSS 2012	10
Table 4:	Mobility of female sex workers in past 12 months vs. HIV status	18
Table 5:	Prevalence of syphilis (VDRL +) among sentinel population, HSS 2012	19

List of figures

Figure 1:	HIV prevalence among female sex workers, HSS 2012	11
Figure 2:	HIV prevalence among People who inject drugs, HSS 2012	12
Figure 3:	HIV prevalence among men who have sex with men, HSS2012	12
Figure 4:	HIV prevalence among new TB patients, HSS 2012	13
Figure 5:	HIV prevalence among different types of TB patients, HSS 2012	13
Figure 6:	HIV prevalence by age groups and sentinel population, HSS 2012	14
Figure 7:	HIV prevalence in different sentinel groups by residence, HSS 2012	16
Figure 8:	Distribution by marital status according to HIV status in different sentinel population, HSS 2012	16
Figure 9:	Prevalence of HIV by exposure time on risk behavior in targeted groups, HSS 2012	17
Figure 10:	Prevalence of syphilis (VDRL +) by age groups and sentinel population, HSS 2012	19
Figure 11:	VDRL positive rate among sentinel population by place of residence, HSS 2012	20
Figure 12:	Prevalence of syphilis (VDRL+) by HIV status and sentinel population, HSS 2012	21
Figure 13:	Syphilis (VDRL+) rate among FSW by sites, HSS 2007-2012	22
Figure 14:	Syphilis (VDRL+) rate among PWID by sites, HSS 2007-2012	22
Figure 15:	Trends of HIV prevalence among low risk sentinel groups, HSS 1992-2012	23
Figure 16:	Trends of HIV prevalence among new TB patients, HSS 2005-2012	23
Figure 17:	Trends of HIV prevalence among most at risk populations, HSS 1992-2012	24
Figure 18:	Trends of HIV prevalence among female sex workers by sentinel sites, HSS 2000-2012	25
Figure 19:	Trends of HIV prevalence among PWID by sentinel sites, HSS 2000-2012	26
Figure 20:	Trends of HIV prevalence among MSM by sentinel sites, HSS 2007-2012	26
Figure 21:	HIV prevalence among tuberculosis patients by sites, HSS 2005-2012	27
Figure 23:	HIV prevalence among 15-24 years of age population by sentinel groups, HSS 2012	28
Figure 23:	Prevalence of HIV among youth of most at risk groups, HSS 2000-2012	28
Figure 24:	Prevalence of HIV among youth of low risk groups, HSS 2000-2012	29

Acknowledgement

The 2012 HIV sentinel sero-surveillance survey was successfully carried out by the concerted efforts of the our M&E officer, State/Divisional AIDS/STD officers, team leaders, officials from the National Tuberculosis Program, National Drug Abuse Control Program and the International Organizations and local organizations in the different parts of the country. Without their strong dedication and responsibilities this report could not be happened. We, therefore, owe our gratitude to all our colleagues for providing their invaluable support for this survey. We also acknowledge the World Health Organization for their useful technical support and finance.

National AIDS Program
Department of Health
Ministry of Health

List of abbreviations

ANC: Antenatal care DoH: Department of Health
FSW: Female Sex Worker
HSS: HIV Sentinel Sero-Surveillance Survey
INGO: International Non-Government Organization
M&E: Monitoring and Evaluation
MSM: Men who Have Sex with Men
NAP: National AIDS Programme
NTP: National TB Programme
NGO: Non-Government Organization
PMCT: Prevention of Mother to Child Transmission of HIV
PWID: People who inject drugs
STD: Sexually Transmitted Diseases
STI: Sexually Transmitted Infections
TB: Tuberculosis
VDRL: Venereal Disease Research Laboratory
UAT: Unlinked Anonymous Testing
WHO: World Health Organization
3DF: Three Diseases Fund

List of townships implementing HIV Sentinel sero-surveillance, 2012

1. Yangon
2. Mandalay
3. Meiktila
4. Taunggyi
5. Lashio
6. Tachileik
7. Muse
8. Dawei
9. Kawthoung
10. Myitkyina
11. Bhamo
12. Mawlamyine
13. Patheingyi
14. Bago
15. Pyaw
16. Magway
17. Hpa-an
18. Sittoung
19. Monywa
20. Loikaw
21. Hakha
22. Hinthada
23. Maubin
24. Myeik
25. Myingyan
26. Pakokku
27. Shwebo
28. Kengtung
29. Myawaddy
30. Nyaung-U
31. Myaungmya
32. Taungtha
33. Pyin Oo Lwin
34. Pyin Oo Lwin
35. Kale

1. Background

The annual HIV Sentinel Sero-surveillance survey, the systematic and regular collection of information on the occurrence, distribution and trends of HIV infection and factors associated with the infection, has been carried out since 1992. The survey has been conducted among 8 targeted sentinel groups: Pregnant Women attending the antenatal clinics (ANC), New Military Recruits, Blood Donors, newly diagnosed TB patients, People who inject drugs (PWID), Men who have Sex with Men (MSM), Female Sex Workers (FSW) and Male patients attending sexually transmitted infection (STI) clinic.

Methodology

In 2012 HSS round, the survey was conducted from 1st March to 31st May 2012 in all 35 sentinel sites where the HSS guideline (2010) was followed. The facility-based sampling approach, in which consecutive eligible participants were recruited until the required sample size, was applied. Unlinked anonymous testing (UAT) was used for pregnant women and male STI patients as they had to undergo routine syphilis testing and for new TB patients as blood glucose testing by National Tuberculosis programme. For the populations at high-risk of HIV: injecting drug users, female sex workers, and men who have sex with men, by using the unlinked anonymous testing (UAT) with informed verbal consent, blood specimen was drawn. Table 1 shows the sentinel groups, number of sentinel sites, and target sample size for each site.

Table 1: Number of sentinel sites and sample size for each sentinel group, HSS 2012

Sr. No.	Sentinel groups	Number of sentinel site	Sample size per site
1	Male STI patients	35	150
2	Female sex workers	10	200
3	Injecting drug users	7	200
4	Men who have sex with men	4	200
5	Pregnant women attending ANC clinics	35	400
6	New military recruits	2*	400
7	New TB patients	25	150
8	Blood donors	2	Not identified**

* The specimens from Military Recruits were collected from the new conscripts in Yangon and Pyinoolwin.

** Data compilation, based on the reports of HIV testing for donated blood units, was done for blood centers and blood banks located in Yangon and Mandalay

2. HIV Antibody Testing

In 2012 round of HSS, all sentinel sites were totally decentralized and performed HIV antibody testing and VDRL testing at the site laboratory. HIV antibody testing was done according to WHO testing strategy II. Serum specimens were screened using an HIV rapid test kit (Determine)

and the reactive specimens were further confirmed by a second HIV rapid test kit (Unigold). HIV sentinel sero-surveillance forms with the test results from the thirty five sentinel sites were sent to NAP - Nay Pyi Taw.

3. Data analysis

A simple Excel worksheet was used for data entry and analysis was done by using SPSS software. Descriptive statistics and cross tabulation were done to measure the prevalence of each sentinel groups, disaggregation with age and sex and/or by sentinel sites. Chi square test was applied and p-value was calculated.

4. Findings

4.1. Sample collection

Overall, 57,045 participants were included in 35 sentinel sites during the 2012 HSS round. Most of the sentinel sites were able to achieve the desired sample size. Table 2 provides comparison between the required and achieved sample sizes among different sentinel populations. Sample size achievement was more than 85% for FSW, PWID and new TB patients; more than 90% for new military conscripts and more than 95% for Male STI patients, MSM and pregnant women.

Table 2: Comparison between the required and achieved sample size among different sentinel population groups, HSS 2012

Sentinel Group	Required sample size per site	No. of sites	No (%) of sites achieving targeted sample size		Total sample size	Achieving sample size	
			No	%		No	%
Male STI patients	150	35	29	82.9%	5,250	5,034	95.9%
FSW	200	10	7	70.0%	2,000	1,784	89.2%
PWID	200	7	4	57.1%	1,400	1,217	86.9%
MSM	200	4	2	50.0%	800	763	95.4%
Pregnant Women	400	35	31	88.6%	14,000	13,995	100.0%
New Military Recruits	400	2	1	50.0%	800	732	91.5%
New TB patients	150	25	13	52.0%	3,750	3,296	87.9%
Blood Donors	not specified					30,584	

Information on age, residence and marital status was collected from all groups except blood donors. For pregnant women, the parity status (primiparous vs. multiparous) was also recorded. Female sex workers were also distinguished as either direct or indirect sex workers, and TB patients were categorized according to the type of TB.

In this round of 2012 HSS, the new information on age of initiating sex work was collected for female sex workers, PWIDs and men who have sex with men. The information on number of

townships worked in previous year was also taken to determine the mobility of female sex workers.

4.2. HIV prevalence by sentinel population

Table 3 shows HIV prevalence among different population groups. HIV prevalence was highest among PWIDs followed by New TB patients, MSM and FSW. HIV prevalence per population group for each sentinel site is presented in annex 1.

Among **pregnant women**, the median HIV prevalence was 0.8%, ranging from 0 to 2% across 35 sentinel sites. Yangon had the maximum prevalence among all sites and it shows increasing trend 1%, 1.3%, 2% after highest 4% in 2009. The second highest sites were Myawaddy and Taunggyi; prevalence rate 1.5%. Myawaddy showed 1.5% and above for 3 consecutive years. Prevalence rate of Muse showed above 3% since 2007 except 2009, 1.5%. But in 2012, it was found 0.8% lowest within 5 years.

Comparing the HIV prevalence between primipara (0.66%) and multipara (0.78%), there is statistically significance with the z value (-15.81) and p value (0.00).

The mean prevalence for **blood donors** was 0.14%, ranging from 0% to 0.74%. . Out of 6 blood centers in Mandalay region, in the Mandalay Teaching Hospital had highest prevalence of 0.74% (5/676) whereas the prevalence of Mandalay Blood Bank was 0.17% (16/9549). The 3 centers in Yangon such as East YGH had a prevalence of 0.43% (3/700) followed by West YGH 0.3% (1/337) and North Okkalapa General Hospital 0.23% (6/2611). Yangon Blood Bank showed 0.08% (11/13229) of HIV prevalence. However, HIV prevalence of blood donors is being declined continuously since 2004 from 0.8% to 0.14% in 2012.

Table 3: HIV prevalence among sentinel populations, HSS 2012

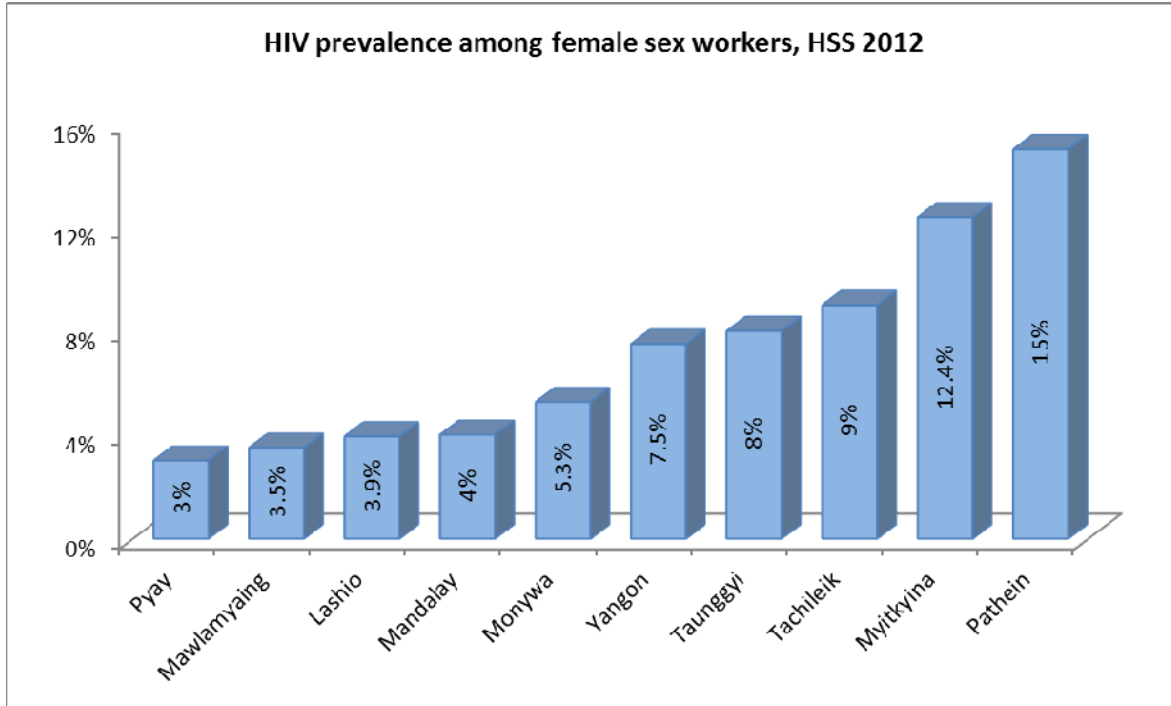
Sentinel Group	# tested for HIV	# HIV positive	sero positive (%)	Range			95% CI
				Minimum (%)	Median (%)	Maximum (%)	
Male STI patients	5,034	204	4.1%	0%	3.3%	14.2%	3.5% - 4.6%
FSW	1,784	126	7.1%	3%	6.4%	15%	5.9% - 8.3%
PWID	1,217	219	18%	6.7%	17%	29%	15.8% - 20.2%
MSM	763	68	8.9%	3%	6.8%	21.3%	6.9% - 10.9%
Pregnant Women	13,995	102	0.7%	0%	0.8%	2%	0.6% - 0.9%
New Military Recruits	732	7	1%	0.6%	0.9%	1.3%	0.3% - 1.7%
New TB patients	3,296	317	9.6%	0.9%	10%	19%	8.7% - 10.7%
Blood Donors	30,584	44	0.14%	0%	0.08%	0.74%	0.1% - 0.19%

In 2012 HSS, there were 5 new sentinel sites added for **female sex workers**; Tachileik, Pathein, Mawlamyine, Pyay and Monywa. One existing site, Kengtung was replaced with Tachileik which is in same geographic area Shan-East as Kengtung could not achieve require sample size for more than 3 consecutive years.

Out of 10 sentinel sites, 3 sites could not achieve targeted sample size of 200; Monywa (n=152), Lashio (n=127) and Myitkyina (n=105). Based on the achieved samples, HIV prevalence was the highest in Pathein (15%) followed by Myitkyina (12.4%), Tachileik (9%), Taunggyi (8%), Yangon (7.5%), Monywa (5.3%), Mandalay (4%), Lashio (3.9%), Mawlamyaing (3.5%) and Pyay (3%). (Figure 1)

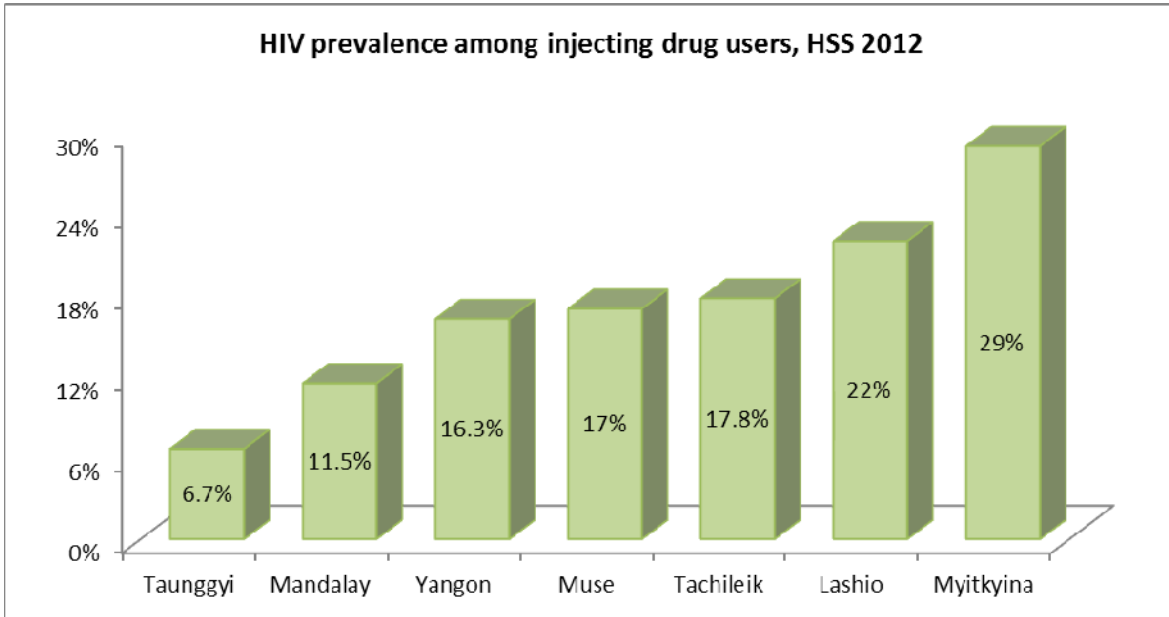
By type of sex work, HIV prevalence was found to be significantly higher in direct sex workers, 9% (100/1109) than indirect sex workers, 3.9% (26/675) with p value of less than 0.0001.

Figure 1: HIV prevalence among female sex workers, HSS 2012



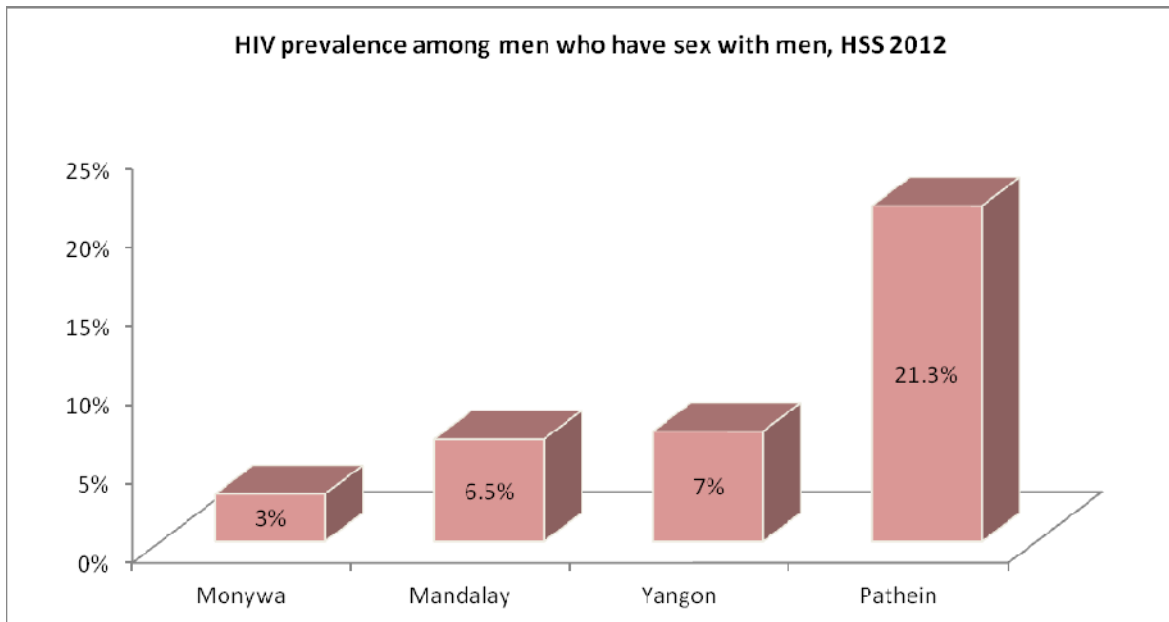
As shown in Figure 2, HIV prevalence among **people who inject drugs**, Myitkyina had the highest prevalence (29%) followed by Lashio (22%), Tachileik (17.8%), Muse (17%), Yangon (16.3%), Mandalay (11.5%) and Taunggyi (6.7%). Although Myitkyina have the highest prevalence for 5 consecutive years, it is on decreasing trends since 2008. Tachileik is newly participated in this round; the special attention should be given to this area in the next round.

Figure 2: HIV prevalence among People who inject drugs, HSS 2012



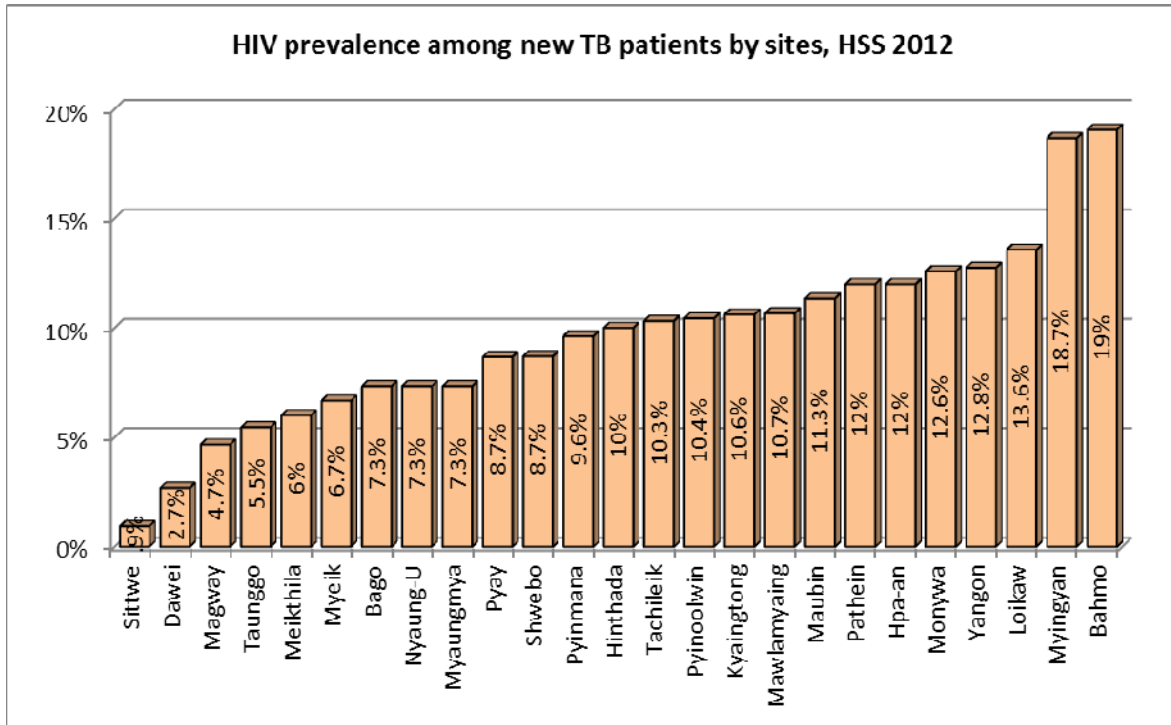
In the round of HSS 2012, total of 4 sentinel sites were chosen for collecting specimen from **men who have sex with men**, among them, 2 sites were new; Pathein and Monywa. Out of these sites, Pathein (n=164) show the highest prevalence of 21.3%. Due to its first round in HSS, the estimation of HIV prevalence should be scrutinized in coming years. The other sites have less than 8% of HIV prevalence. (Figure 3)

Figure 3: HIV prevalence among men who have sex with men, HSS2012



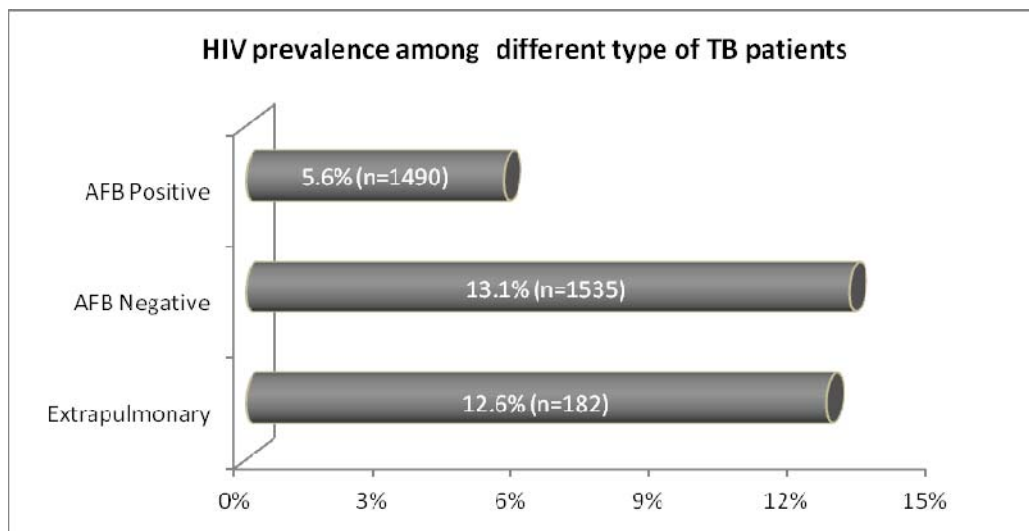
Regarding the **new TB patients**, 5 new sentinel sites were expanded in 2012. The HIV prevalence among this target group ranged from 0.9% in Sittwe to 19% in Bahmo. More than 15% prevalence was found in Bhamo and Myingyan. (Figure 4)

Figure 4: HIV prevalence among new TB patients, HSS 2012



Analyzed by type of TB showed that HIV prevalence was higher among smear-negative TB patients (13.1%, 201/1535) compared to smear-positive TB patients (5.6%, 83/1490) and extrapulmonary tuberculosis patients (12.6%, 23/182) ($p < 0.0001$). (Figure 5)

Figure 5: HIV prevalence among different types of TB patients, HSS 2012



4.3. HIV prevalence by sex and age among sentinel population

The HIV prevalence among male TB patients 10.2% (214/2107) and female TB patients 8.7% (103/1192) have no significant difference (Pearson chi-square = 2.0136 $P = 0.156$)

According to the reports from Blood Banks and Blood Centers located in Yangon and Mandalay, during the survey period, 31% of blood units were donated by female donors 9,474/30,584. Out

of 30,584 units of donated blood, 0.12% (11/9,474) of those donated by female and 0.16% (33/21,110) of those donated by male were found to be screening HIV positive.

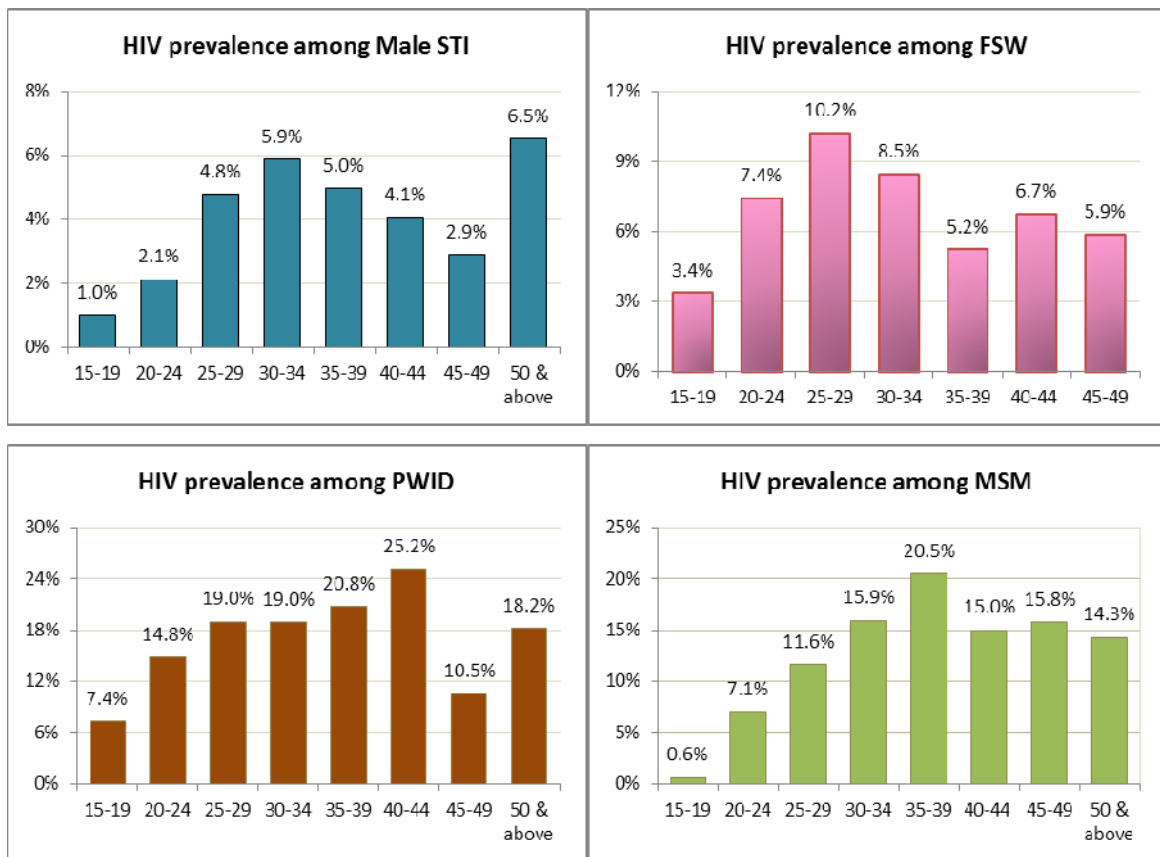
HIV prevalence by age groups HIV prevalence was the highest after the 30 year age group in PWID, MSM, male STI and new TB patients. Among PWID, HIV prevalence is highest in 40-44 years of age and relatively higher in over 50 years of age group. Among male STI patients the prevalence was highest in the 50 years of age group. The relatively low number of sample in these older age groups was one of the attributes.

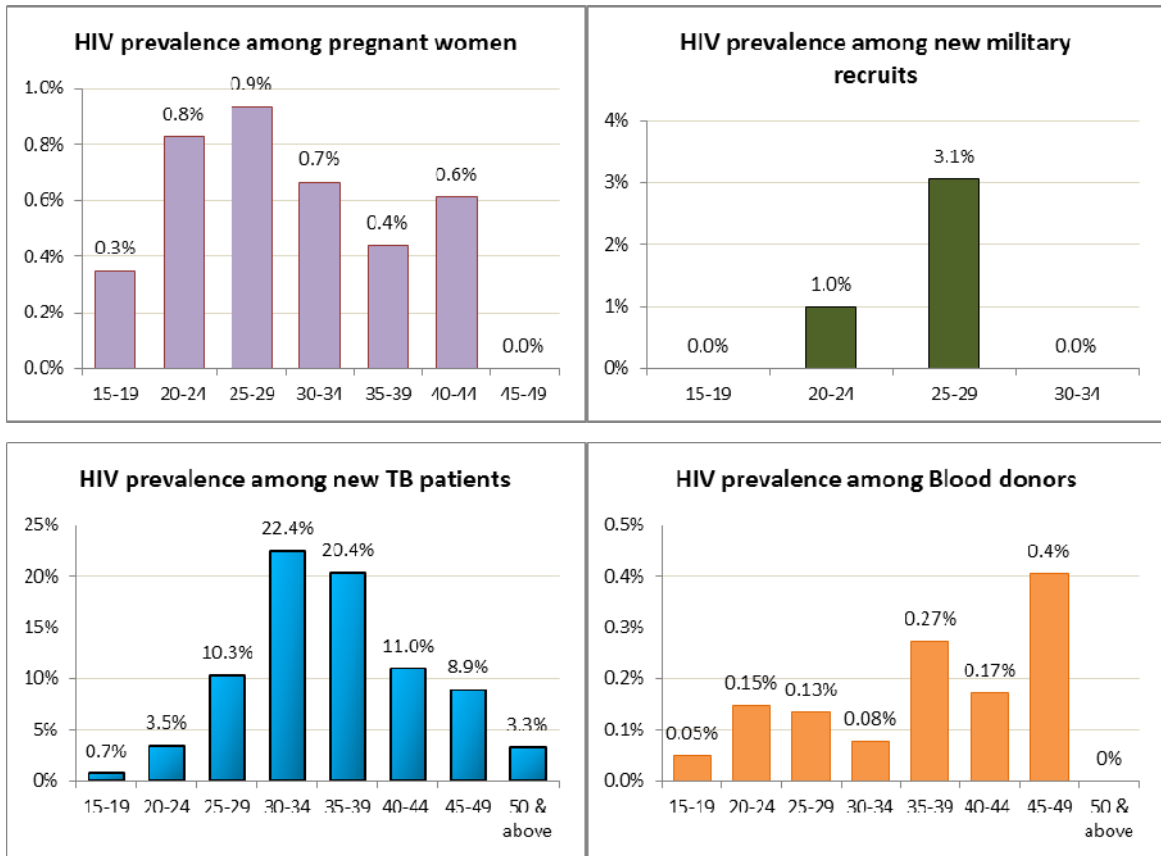
Among pregnant women, HIV prevalence was higher in the 20-29 years age groups. The prevalence is declining in this age group which has been the highest for consecutive years.

Looking into the HIV prevalence among younger age 15-19 year and 20-24 year groups, it was found that HIV prevalence were 0.3% and 0.8% for pregnant women; 0% and 1% for new military recruits for respective age groups.

HIV prevalence by age groups is presented for each sentinel group in Figure 6.

Figure 6: HIV prevalence by age groups and sentinel population, HSS 2012

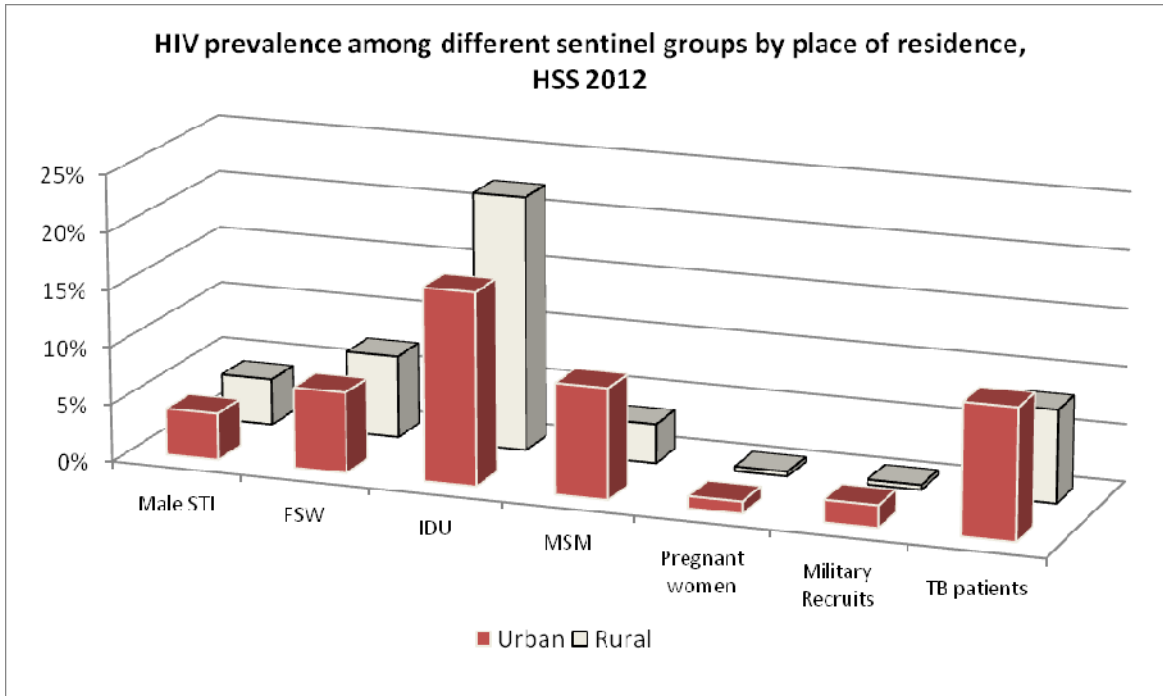




4.4. HIV prevalence by place of residence and marital status

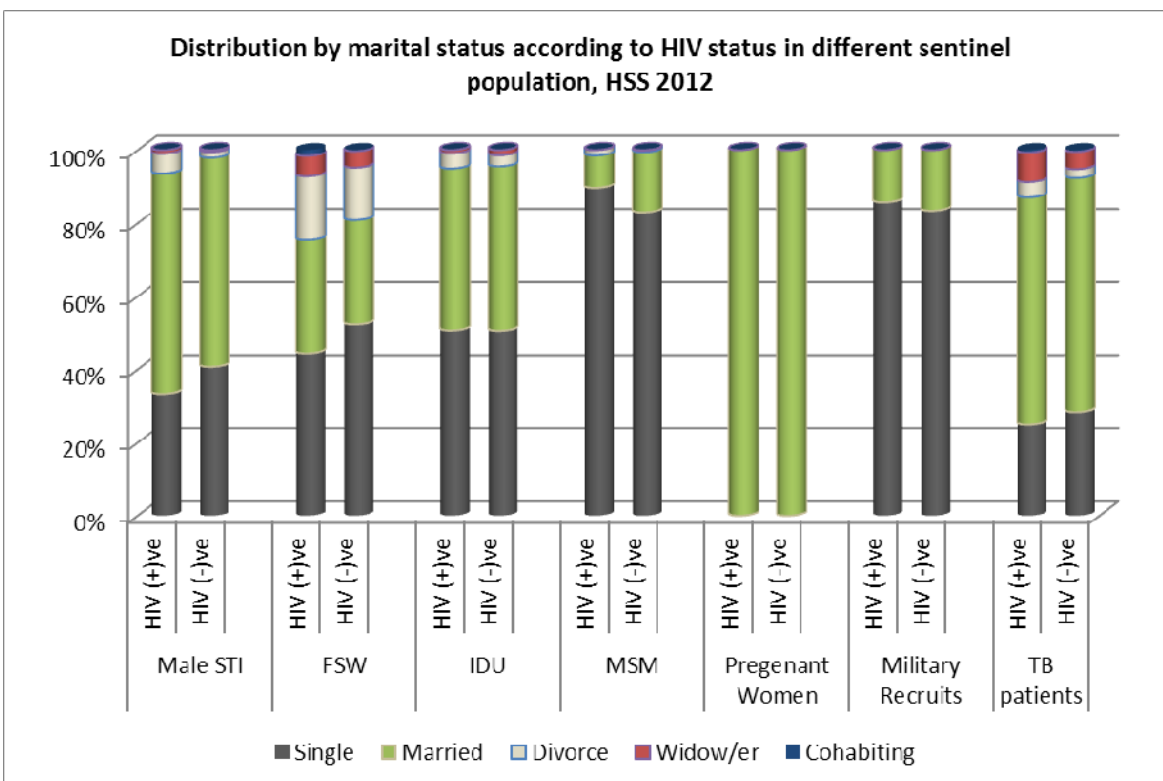
The status of HIV prevalence by residence was presented in Figure 7. In 2012 HSS, rural population ranged from 12-27% of collected sample in most at risk populations. There was some degree of difference in HIV prevalence found between Urban and Rural population in each target group. Significant difference was found in two groups – PWID and TB patients. Higher HIV prevalence in rural PWID indicated the need to assess the availability and accessibility of harm reduction services for rural PWIDs. For new TB patients, urban population is higher in HIV prevalence (p=0.001) than rural area.

Figure 7: HIV prevalence in different sentinel groups by residence, HSS 2012



The distribution of marital status of different sentinel groups did not differ significantly by HIV status with the exception of male STI and FSW (Figure 8). However, the significant proportion of married among those with HIV infection is calling for the vigilant prevention services targeting regular sexual partners, intimate partners (spouses) of those most at risk population groups.

Figure 8: Distribution by marital status according to HIV status in different sentinel population, HSS 2012

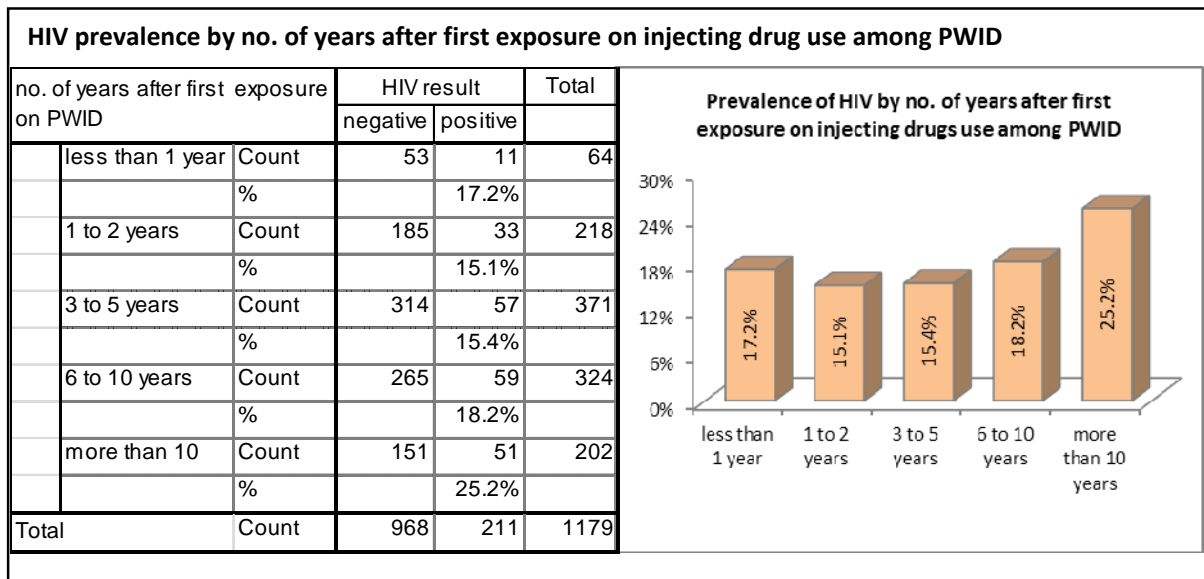
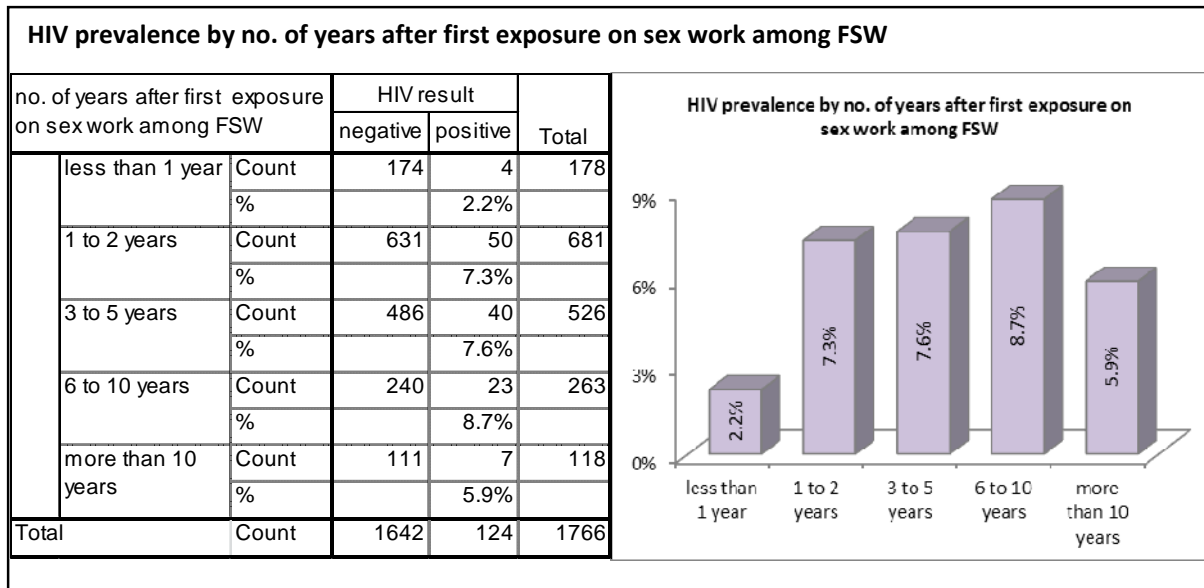


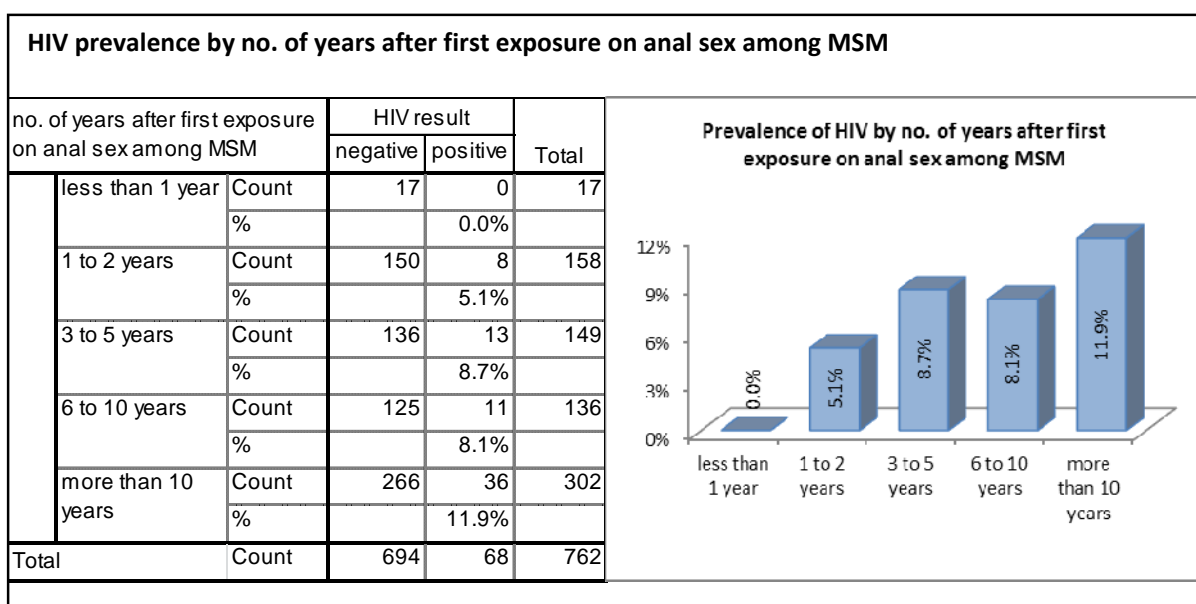
4.5. HIV prevalence by exposure time on risk behavior

In 2012 round of HSS, new information about age of initiating risk behavior was collected on most at risk population to know number of years of exposure on risk behavior in respective sentinel group. The information was taken over from female sex workers, injecting drugs users and men who have sex with men as a proxy of new infections by showing the HIV positive rates among those within one year of engagement in risk behavior.

There is seen the transmission of HIV infection in the risk groups (female sex workers and people who inject drugs) who exposed to risk behaviour less than one year. It is alarming that the need of effective prevention program for these newly joined targeted groups must be scaled up. (Figure 9)

Figure 9: Prevalence of HIV by exposure time on risk behavior in targeted groups, HSS 2012





The information on number of townships worked for sex in past 12 months is also collected from female sex workers to know the mobility pattern which they have done for sex work. About half 53.2% of Female Sex Workers, sex worked in one township and 28.9% of FSW sex worked in two townships and those mobility patterns are highest frequency among FSW sentinel population. The prevalence is increased with increasing number of townships worked in the past 12 months. (Table 4)

Table 4: Mobility of female sex workers in past 12 months vs. HIV status

		# of female sex workers	%
no. of townships worked in past 12 months	1 township	820	53.2%
	2 townships	445	28.9%
	3 townships	180	11.7%
	more than 4 townships	97	6.3%
Total		1542	100%

		HIV positive	%
no. of townships worked in past 12 months	1 township	46	5.6%
	2 townships	43	9.7%
	3 townships	22	12.2%
	more than 4 townships	3	3.1%
Total		114	

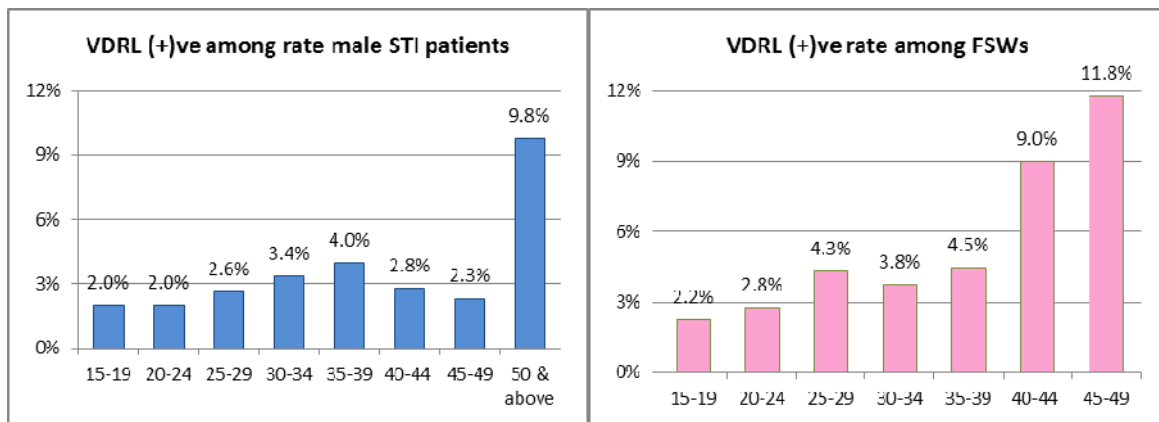
4.6. Results of syphilis screening

Syphilis testing (VDRL) has been introduced since 2007 HSS. In 2012 round, the prevalence of VDRL positive was highest among female sex workers (3.8%) and followed by men who have sex with men (3.3 %) and male STI patients (2.9 %). (Table 5)

Table 5: Prevalence of syphilis (VDRL +) among sentinel population, HSS 2012

Sentinel Group	# tested for STI	# VDRL positive	VDRL (+)ve (%)	Range			95% CI
				Minimum (%)	Median (%)	Maximum (%)	
Male STI patients	5034	146	2.9%	0%	10%	19%	2.4% - 3.4%
FSW	1784	67	3.8%	0%	3.7%	8.5%	2.9% - 4.6%
PWID	1217	16	1.3%	0%	1%	3.9%	0.7% - 2.0%
MSM	763	25	3.3%	0%	3.8%	6.1%	2.0% - 4.5%
Pregnant Women	13995	45	0.3%	0%	0.3%	1.8%	0.2% - 0.4%
New Military Recruits	732	11	1.5%	0.6%	1.4%	2.3%	0.6% - 2.4%

Figure 10 revealed the variation of syphilis rate by age group in sentinel populations. The Syphilis prevalence was highest among Male STI patients as 9.78% in 50 and above age group (9/92), 11.8% in 40-49 age group of FSW (4/34), 9.1% in 50 and above age group of PWID (2/22), 15.8% in 45-49 age group of MSM (3/19). For low risk group, syphilis prevalence was highest among Pregnant women in age group 40-44 as 0.6% (4/492) and in 25-29 age group of Military recruits as 2.0%(2/98). The presence of certain level of prevalence among 15-19 age group for Male STI patients, PWID and FSW indicating the risk of sexual transmission of HIV in those young people and thus calling for prevention actions to be taken. High prevalence in older age group of high risk population may be due to relatively low sample for that age group population.

Figure 10: Prevalence of syphilis (VDRL +) by age groups and sentinel population, HSS 2012

National AIDS Programme

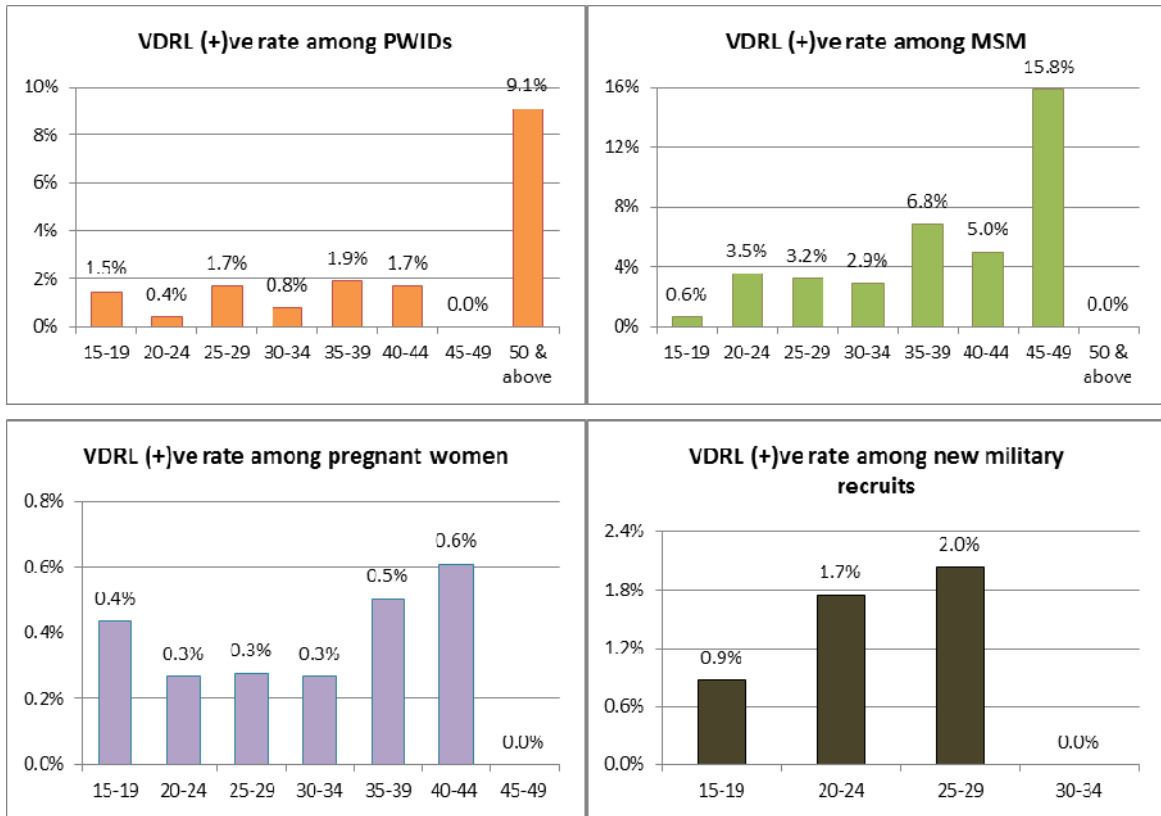
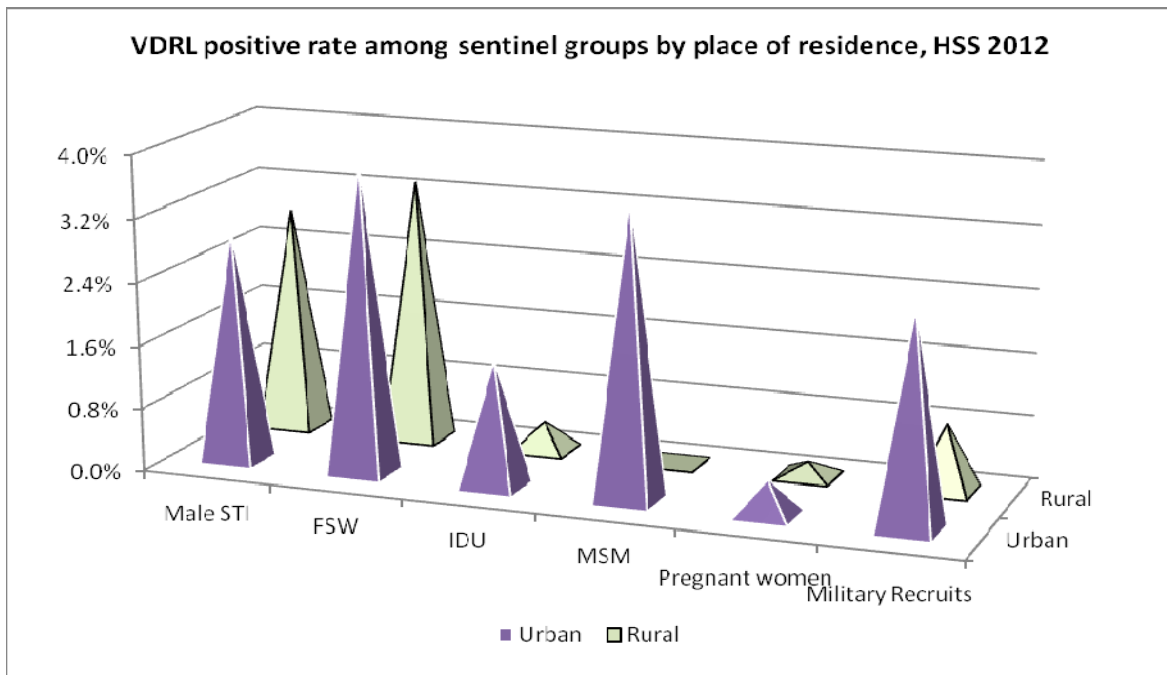


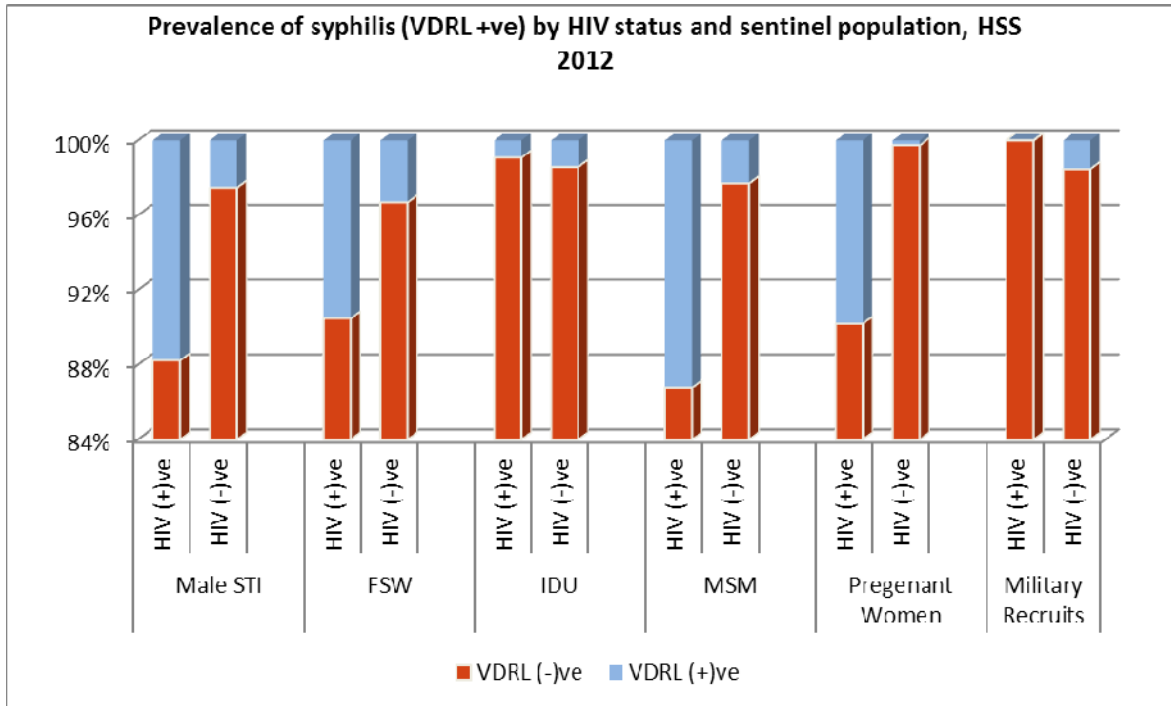
Figure 11 showed the comparison of VDRL positive rate between urban and rural populations. Syphilis prevalence was seemed to be higher in urban areas in PWID and MSM, but it was not significantly different. The reason for high prevalence in rural population of FSW and male STI may be due to relatively low sample from that residence group. But, the expanding spread of sexually transmitted diseases to rural populations is quite concerning.

Figure 11: VDRL positive rate among sentinel population by place of residence, HSS 2012



Prevalence of syphilis was found significantly higher in HIV test positive risk groups. VDRL was found 13.2% in HIV positive MSM, 11.8 % in HIV positive male STI patients, 9.5% in HIV positive FSW and 0.9% in HIV positive PWID. In HIV positive pregnant women, VDRL prevalence was 9.8% and Syphilis was not found in HIV positive military recruits. In HIV negative sentinel groups Syphilis prevalence were 2.3%, 2.5%, 3.3%, 1.4% for MSM, Male STI patients, FSW and PWID. In HIV negative pregnant women, syphilis prevalence was found 0.3% and 1.5% in new military recruits. (Figure 12)

Figure 12: Prevalence of syphilis (VDRL+) by HIV status and sentinel population, HSS 2012



Among FSWs and PWIDs, there were wide variations in the syphilis prevalence by sites (Figure 13 & 14). Mild rising trend was observed in Myitkyina for FSW; Lashio and Muse for PWIDs. VDRL trend for Yangon is declining in 2012. Nowadays, there was changing in pattern of drug use with most of PWID using both injecting and oral drugs. Sexual stimulation, one of the well-known side effects of oral stimulants, was alleged to be the major attribute for the rising syphilis rate among PWIDs. Nevertheless, prevention interventions for PWIDs should emphasize not only on preventing HIV transmission through injection but also the prevention of sexual transmission.

Figure 13: Syphilis (VDRL+) rate among FSW by sites, HSS 2007-2012

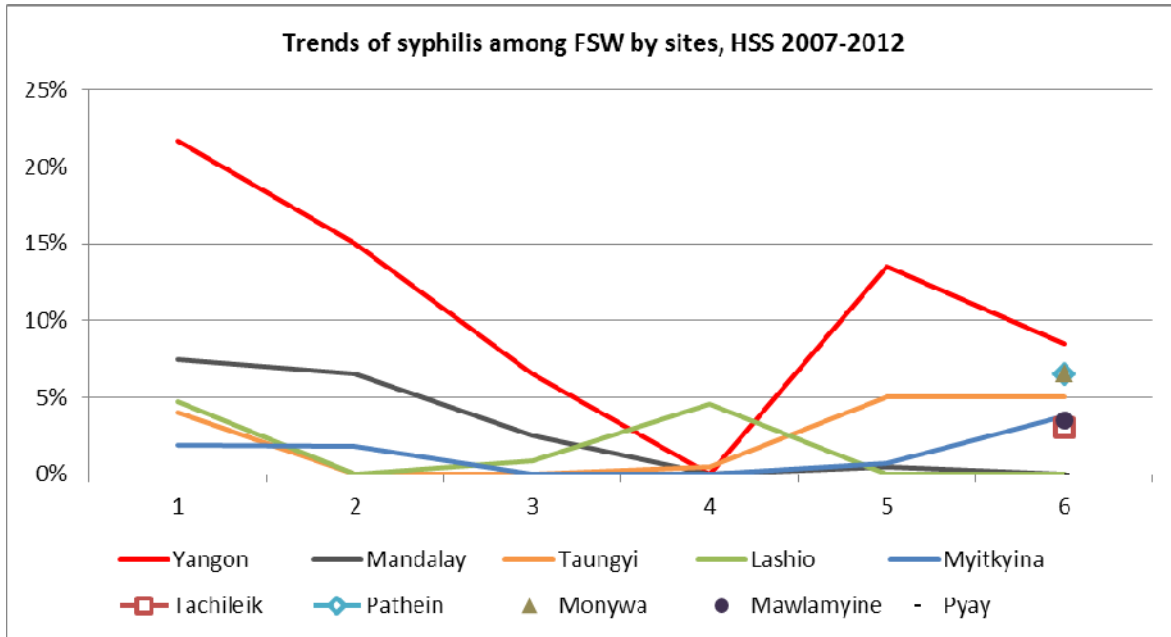
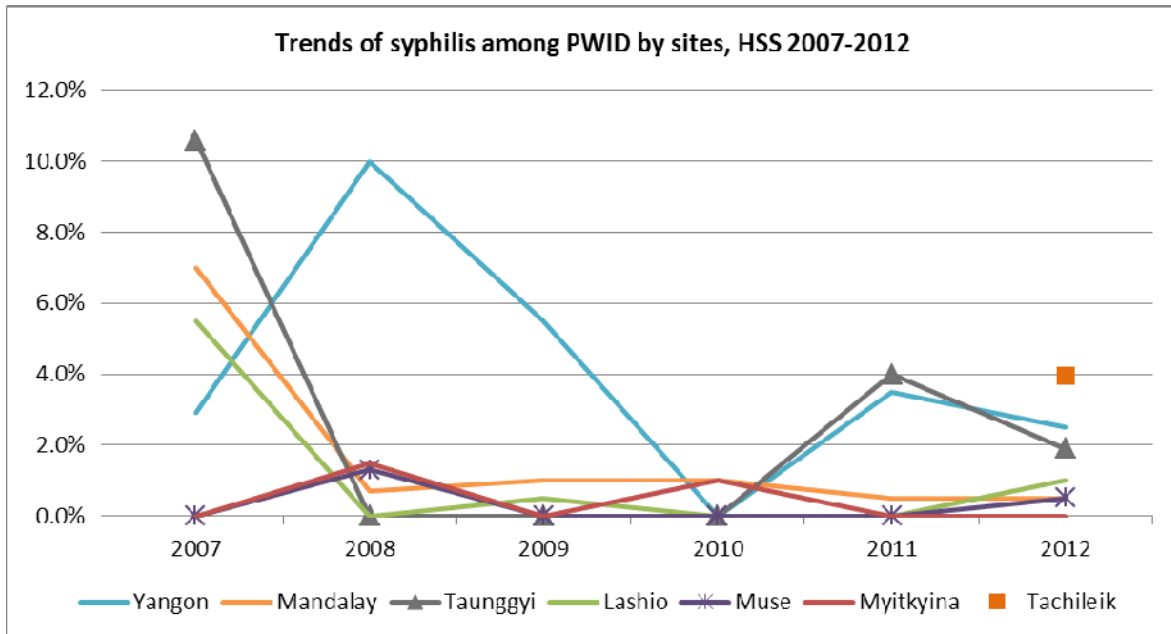


Figure 14: Syphilis (VDRL+) rate among PWID by sites, HSS 2007-2012

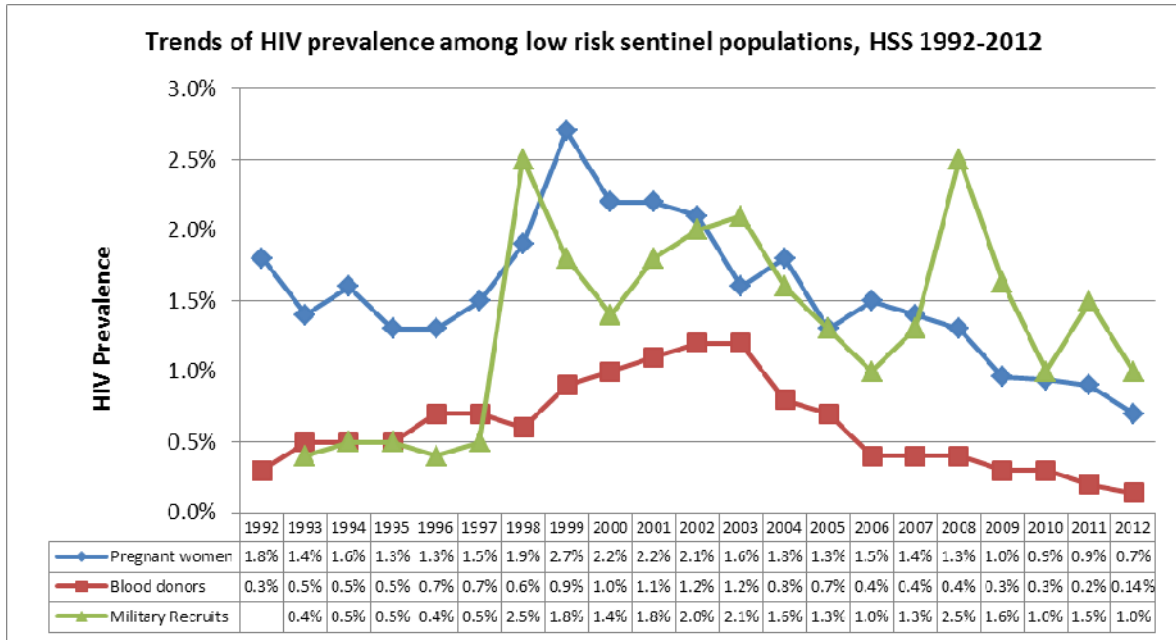


5. HIV trends over time

5.1. HIV prevalence among sentinel groups 1992-2012

Overall trends of HIV prevalence revealed down-warding in nature after reaching a peak in late 1990-2000. In 2012 HSS, trend prevalence for pregnant women showed continued moving in declining direction; as well as for blood donors after peak in early 2000s. The HIV prevalence among new military recruits showed fluctuation in nature and decreasing in this round. (Figure 15)

Figure 15: Trends of HIV prevalence among low risk sentinel groups, HSS 1992-2012



Since 2005, HIV prevalence for new TB patients has been fluctuating round about 1% above and below the 10% level and it is slightly on mild declining trend. (Figure 16)

Figure 16: Trends of HIV prevalence among new TB patients, HSS 2005-2012

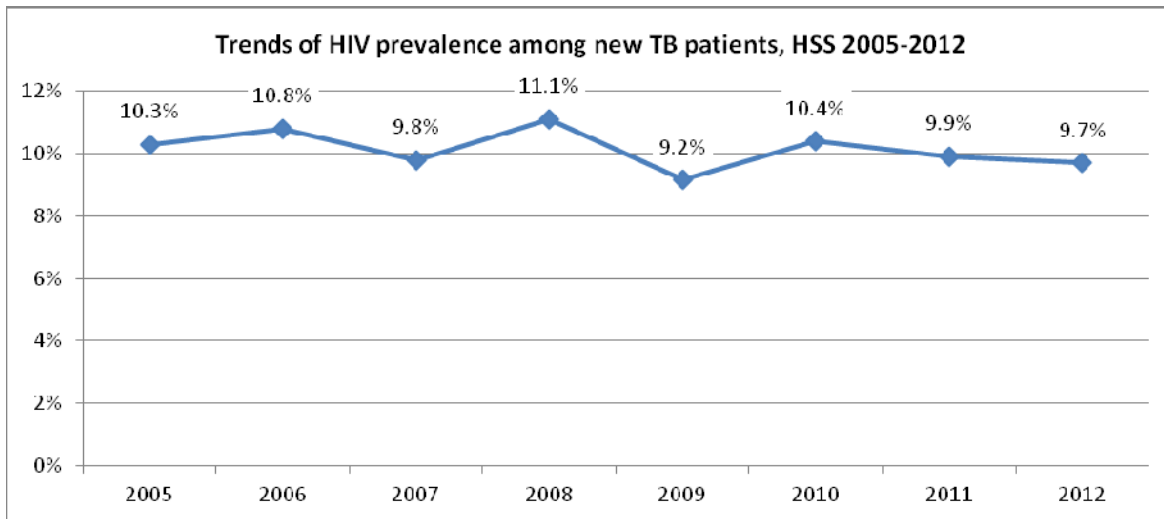
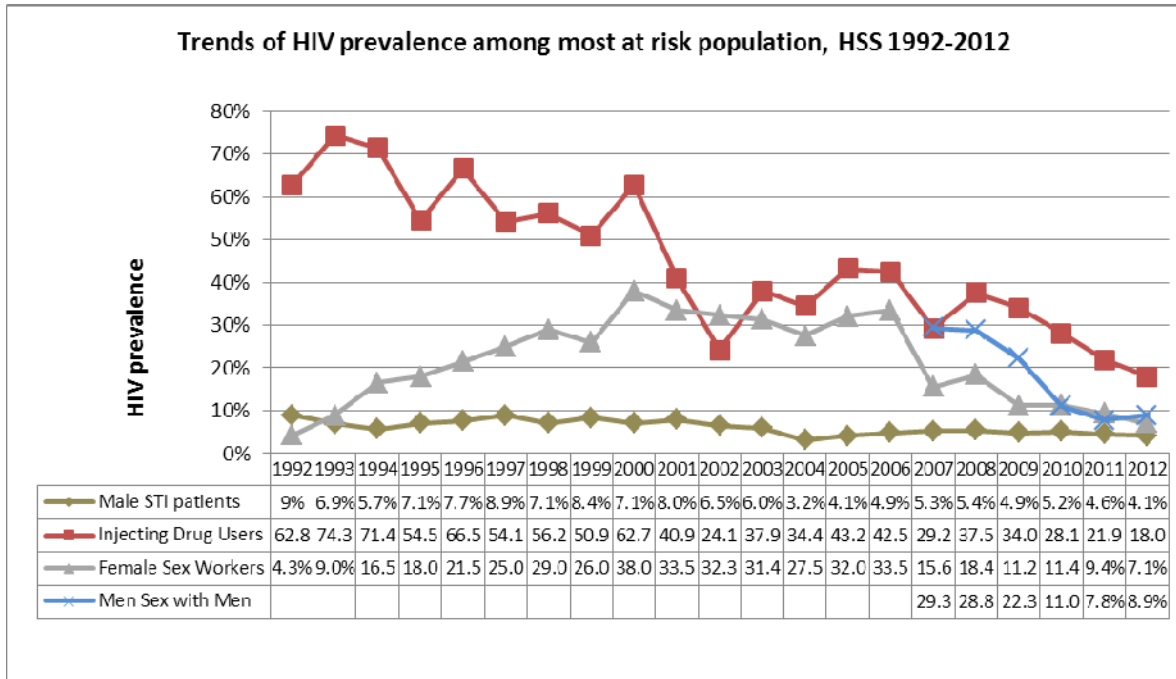


Figure 17 revealed the trends of HIV prevalence among most at risk populations. After a sharp decline in 2007, the trends continue with slow down-warding movement. In 2012 HSS, all risk groups showed decreasing direction except for MSM. This declining direction may be due to actually reducing of prevalence or may be explained by expansion of new sentinel sites for these risk groups. For MSM, the prevalence has revealed a sharp decline since 2010 and in this round, 2 new sites were added and the overall prevalence still revealed prevalence below 10%.

Nevertheless, the limited sentinel sites lead to uncertainty of the results; thus IBBS among MSM should be conducted again to be able to triangulate the prevalence.

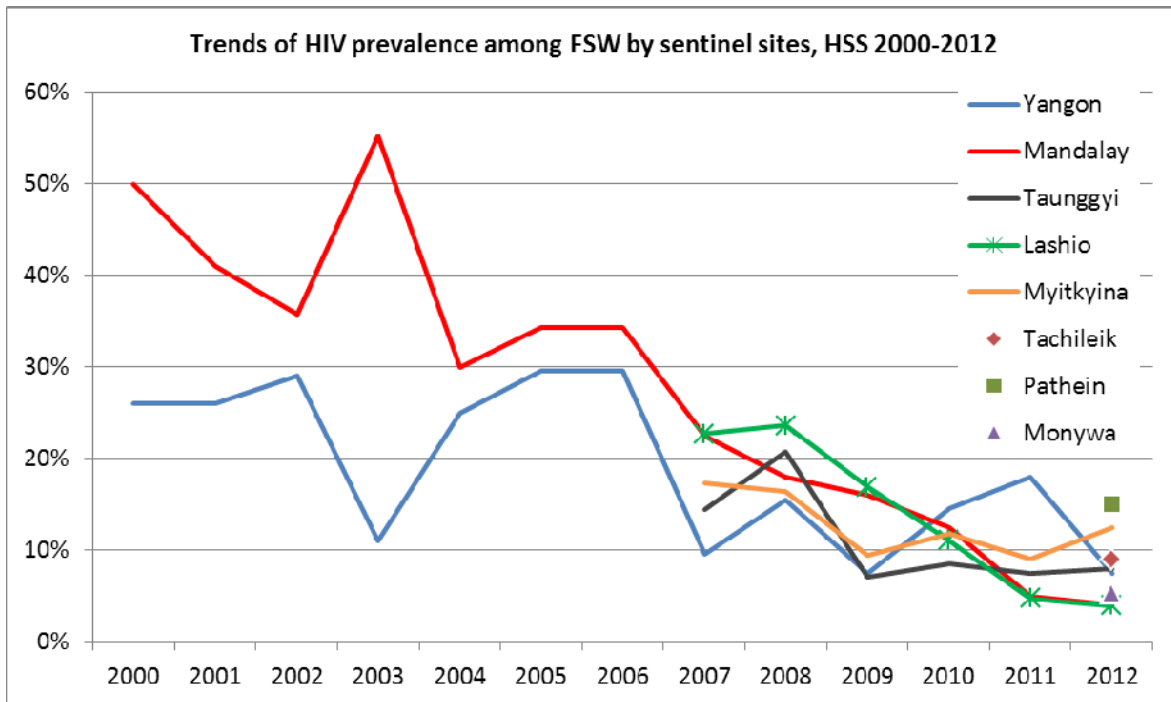
Figure 17: Trends of HIV prevalence among most at risk populations, HSS 1992-2012



In 2012, the prevalence of HIV among female sex workers show decreasing trends in all sentinel sites except Myitkyina and Taunggyi. The mark uprising of prevalence in Yangon of last year HSS was seen to be declining in this round with declined trend in general. The steady declining was seen in Mandalay and Lashio after 2006 and 2008 showing one of the fruitful results of coordinated effort of all implementing partners working in that area. In Myitkyina, there was seen to be fluctuating trend and slightly increased in both HIV and syphilis prevalence than previous round. There may be active transmission of HIV among this group and it called for more effective prevention services in that area.

The apparent declined trends observed in old sentinel sites, Yangon, Mandalay, and other old sites since 2007 may be explained by a couple of reasons: getting more representative sample through better coordination with partners in sample collection; turning over of the FSW and thus catching the newly recruited group; or the actual declines in HIV prevalence with the intensive TCP programme in place for a long time. The first reason was supported by having the positive rate within the acceptable range of those of newly expanded sentinel sites. The last reason was supported by declining HIV prevalence among younger group (15-24). Figure 18 depicts trends of HIV prevalence among female sex workers by sites.

Figure 18: Trends of HIV prevalence among female sex workers by sentinel sites, HSS 2000-2012



A close look at PWID trend for each sentinel site revealed a continuous declining trend of HIV prevalence in general. All sites show consecutive steady downward trends after 2008. The most significant decline can be seen in Lashio since a peak in 2003 although there was a slight uprising in this round. It was interesting to find out that Myitkyina's trend has relatively sharp up and down movement in 2002 and 2007 with the declines coinciding with that observed at overall level and it needed to look for next year prevalence. It was interest to know whether these cyclical patterns of declines were associated with some locally prevailing significant issue(s) such as availability of drugs, mobility of risk population etc. This called for more coordinated efforts among partners in these areas identifying the hidden/ associated issue(s) and thus interventions tailored to local need could be planned and provided and another rising wave that might as usual follows the marked decline could be prevented. (Figure 19)

Figure 19: Trends of HIV prevalence among PWID by sentinel sites, HSS 2000-2012

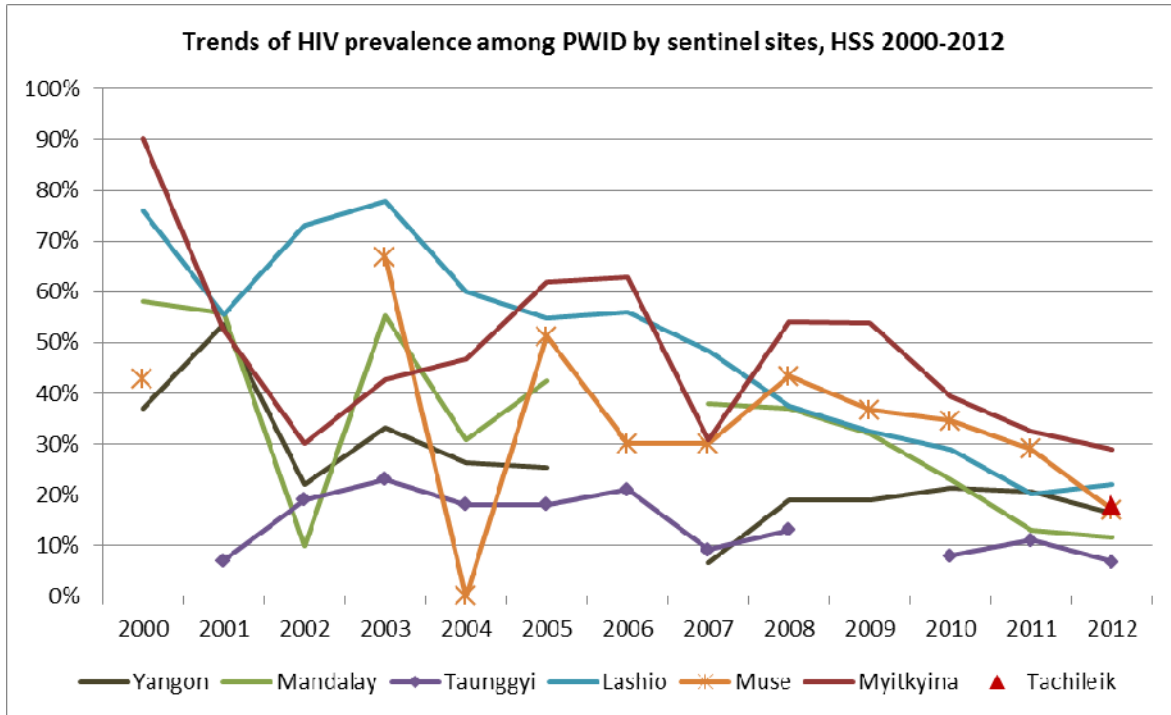
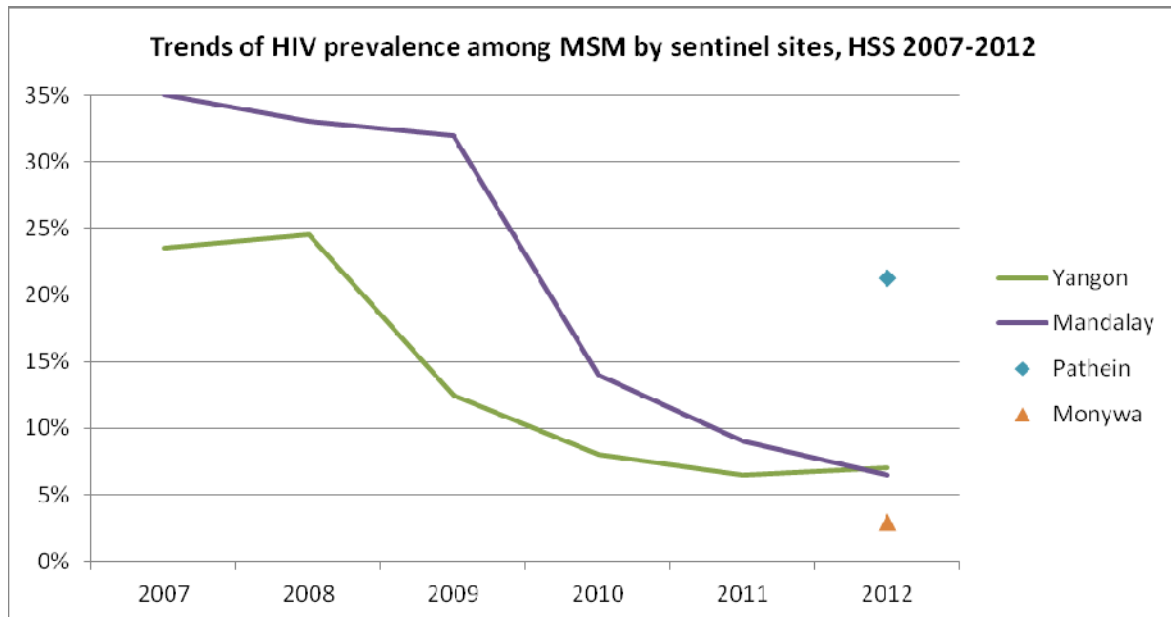


Figure 20 show trends of HIV prevalence among MSM by sentinel sites. 2 new sites with 2 existing sites implemented HSS for MSM and a new site, Pathein gave a higher prevalence look for first year. Although there were a few sentinel sites for MSM, it showed overall decreasing trends in Yangon and Mandalay since first implementing in 2007. Getting a wider sample collection network and thus more representative sample may explain the decline. Nevertheless, intensifying the targeted prevention interventions for this group must be continued.

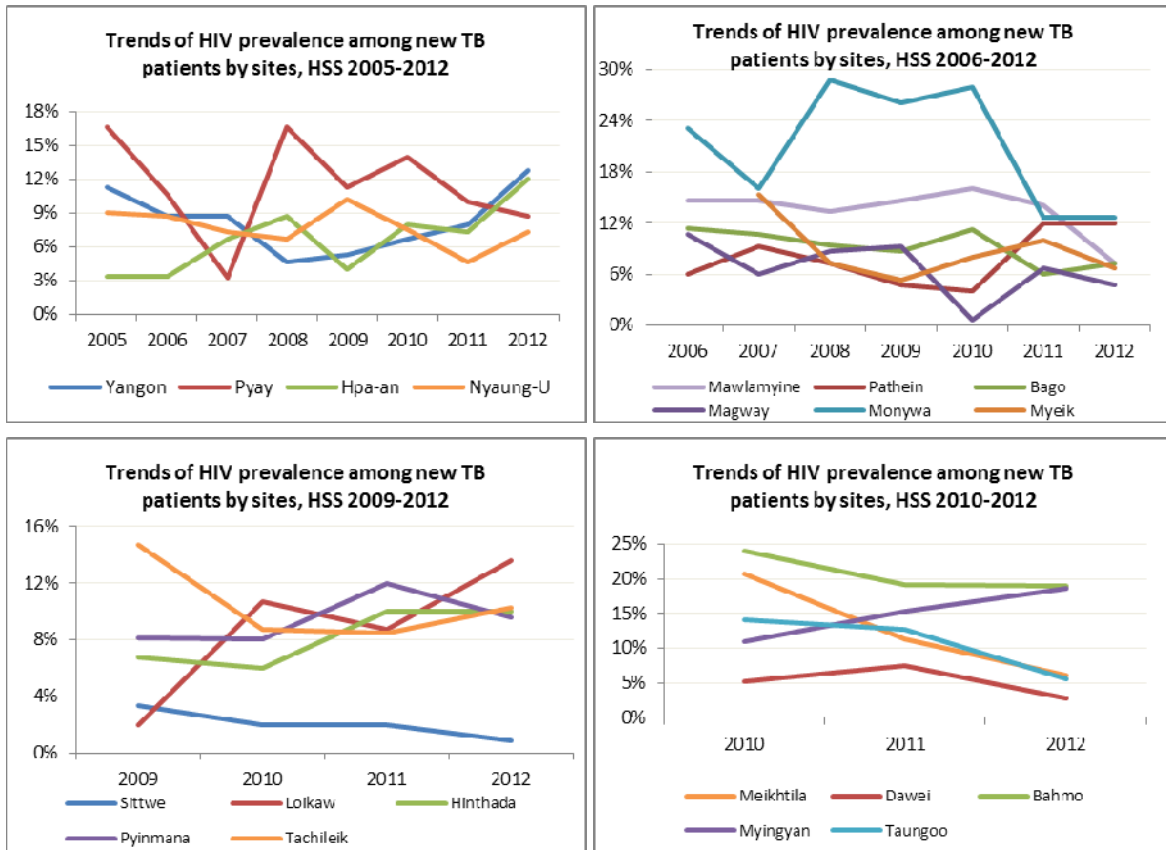
Figure 20: Trends of HIV prevalence among MSM by sentinel sites, HSS 2007-2012



The overall HIV prevalence among tuberculosis patients showed slight fluctuation from 2005 to 2012. Having included as a sentinel group since 2005 and expanded to five sites in 2006, 2009,

2010 and 2012 each; trend analysis could be done for 20 sites only. The trends varied with the sentinel sites: Bhamo showed highest prevalence for 3 consecutive years. Yangon, Myingyan, Loikaw and Hpa-an showed uprising trends of HIV prevalence, Monywa and Pathein had a consistent level of HIV prevalence more than 10% and Pyay and Tachileik showed HIV prevalence level of 8 to 10% for consecutive years. These sites should be considered for implementing complete package of TB-HIV services. (Figure 21)

Figure 21: HIV prevalence among tuberculosis patients by sites, HSS 2005-2012



5.2. HIV prevalence among young population

Decline in HIV prevalence among youth population was seen on overview of trends analysis. In depth view on the prevalence among young sentinel populations revealed that FSW and new military recruit youth had a cyclical pattern with up and down in prevalence trends. Considering as a proxy for new infection, it is clear that vigilant prevention interventions with innovative means focusing on prevention of new infection among youth with risky behavior need to be taken urgently. (Figure 22, 23 & 24)

Figure 22: HIV prevalence among 15-24 years of age population by sentinel groups, HSS 2012

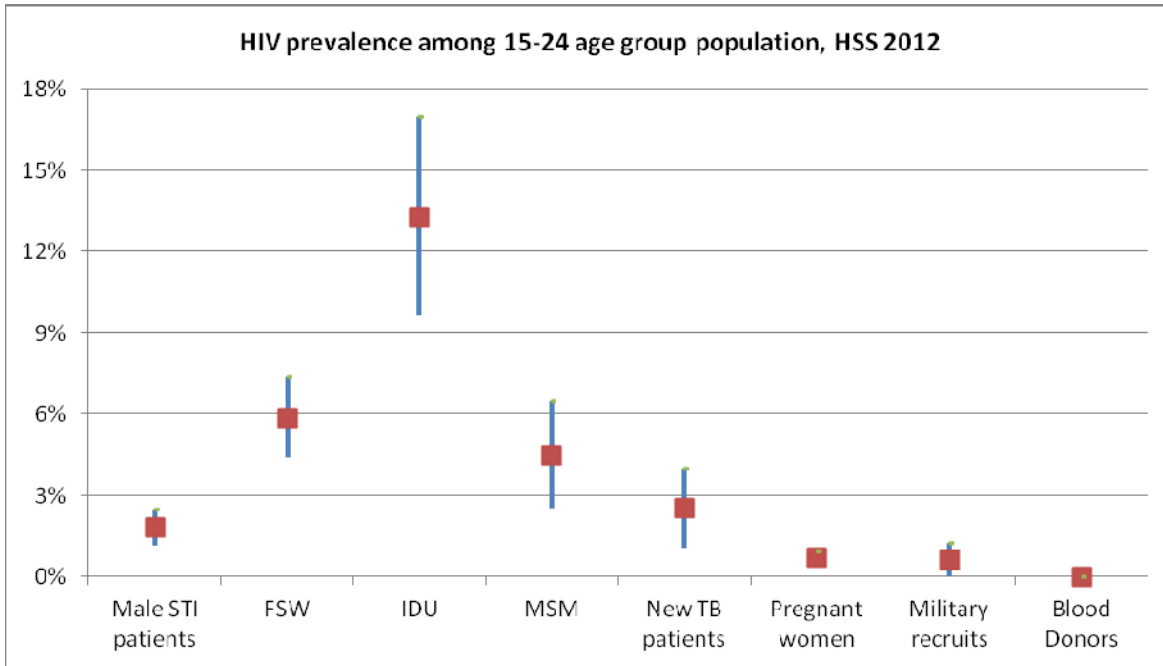


Figure 23: Prevalence of HIV among youth of most at risk groups, HSS 2000-2012

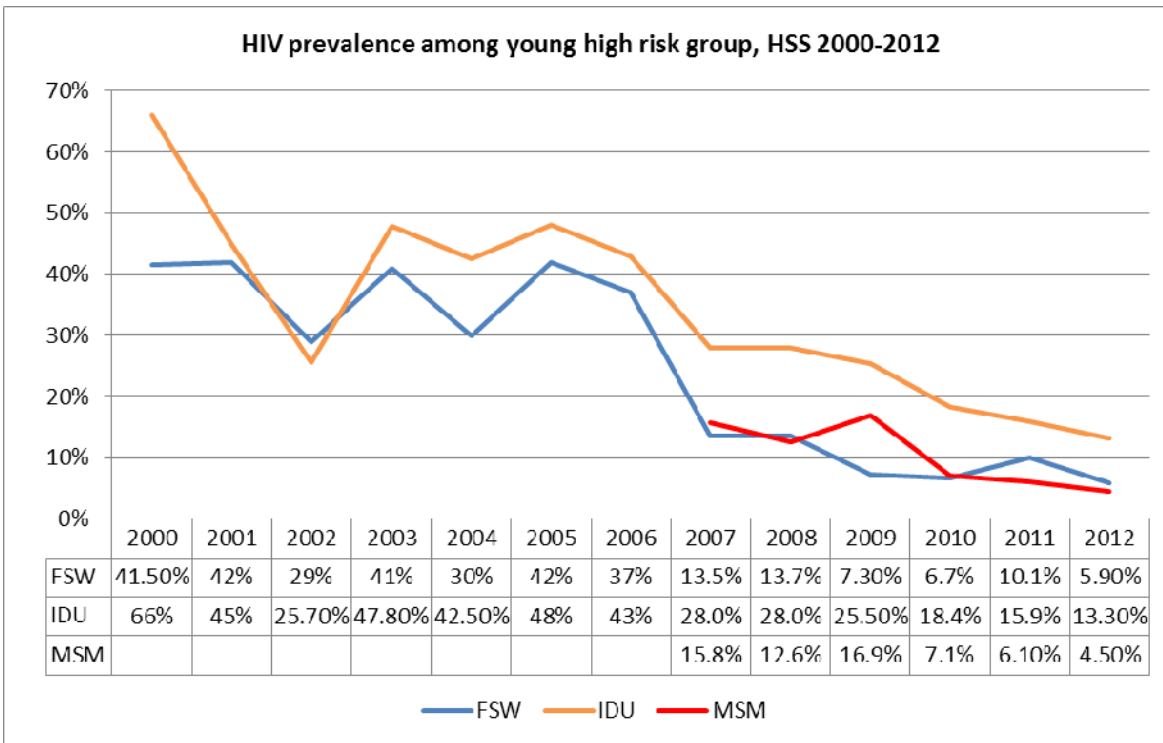
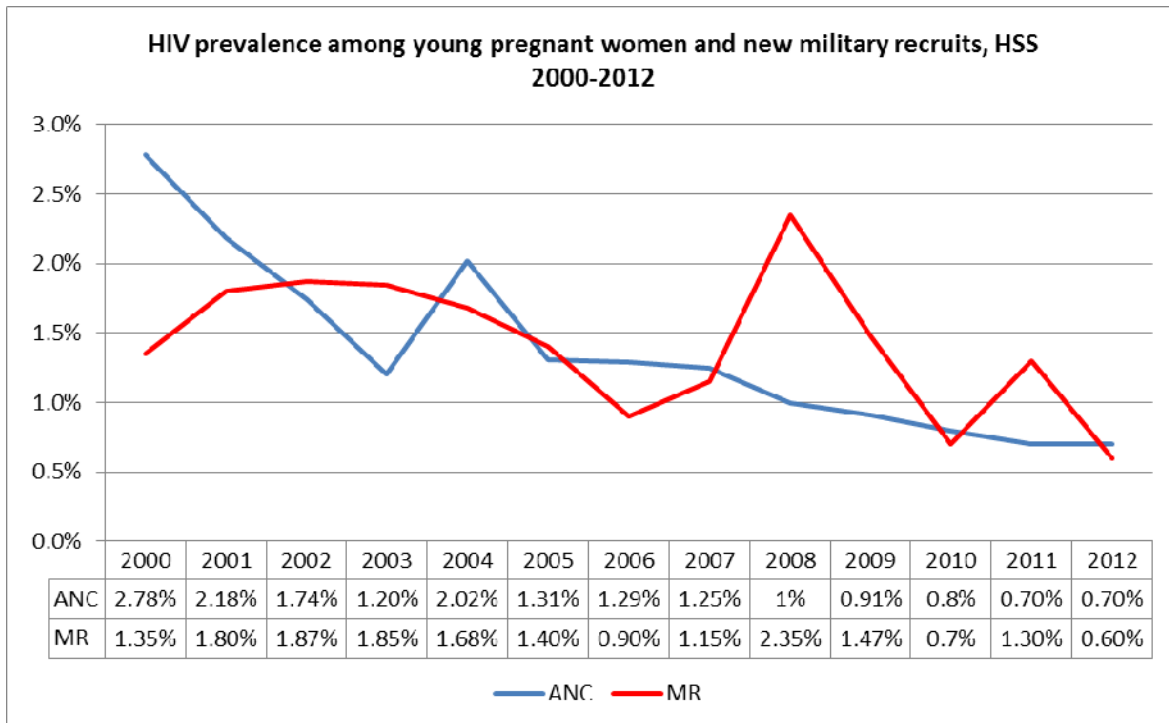


Figure 24: Prevalence of HIV among youth of low risk groups, HSS 2000-2012



6. Recommendation

6.1. Recommendations for programme implementation

- Understand the magnitude, epidemiological nature and overall figure of the HIV in the country, HSS data should be triangulated with other available data sources: behavioral surveillance surveys, programme monitoring data, rapid assessments and other surveys data.
- Use of data for the benefits of the targeted groups for the acceleration of the prevention programs and care and treatment programs
- Share the information to the respective authorities but also the beneficiaries to promote the awareness of HIV and AIDS
- The prevention intervention activities must be intensified not only for most at risk populations, but also for general population including rural population.
- Human resources and institutional capacity in surveillance should be strengthened.

6.2. Recommendations for surveillance

- All implementers at field level must strictly follow the HSS protocol (2010).
- Before starting any round of HSS, all State & Regional AIDS/STD and TB officers and team leaders must gather together with the central level surveillance officers to discuss and share the field experience, difficulties in conducting the survey and find the ways to overcome difficulties.

National AIDS Programme

- With the expansion of sentinel sites, the achieved sample sizes for MARPs become more representative than previous years. But it is still need for expansion of new sentinel sites for FSW, MSM and PWID in coming rounds of HSS.
- In order to avoid possible sampling bias and to achieve required sample size for sentinel groups, coordination and networking at township level with INGOs, national NGOs, Drug Treatment Centers and Myanmar Medical Associations especially with general practitioners before the commencement of HSS should be improved.
- National AIDS Programme must strengthen the supervisory mechanism for the sentinel surveillance sites. Before the start of HSS and during the period of survey the National M&E officer and State and Regional AIDS/STD officers must conduct preliminary assessment for the needs and attempt to arrange the mechanisms of specimen collection at the respective areas where they cover before the HSS commences.
- The sample sizes had achieved more than 80% except PWID and new TB patients. The AIDS/STD team leaders and TB team leaders should consider about possible ways to solve the issues and collect required sample size.
- In this round of HSS, all sentinel sites are totally decentralized, however the internal and external quality assurance must be assured and all AIDS/STD teams must continue participating in external quality control procedures.
- The new sites for military recruits should be considered to participate in the next rounds.
- The integrated bio-behaviour survey should be considered by adding up the behavioural questions in the future years as substitution of the HSS.
- MSM HIV prevalence in Mandalay was declining to 6.5% in 2012 HSS. HIV prevalence was found 35%, 33% and 32% consecutively in 2007, 2008 and 2009. Therefore IBBS among MSM group in Mandalay and Yangon should be conducted again.

7. Annexes

7.1. Annex 1: Total number of blood sample collected (n) and HIV prevalence (%) by sentinel population and sites, HSS 2012

Sr. no.	Sentinel site		Sentinel Groups								
			Male STI	FSW	PWID	MSM	Preg women	Military Recruits	New TB	Blood Donor	Total
1	Yangon	(N)	150	200	160	200	400	400	150	18699	1659
		(%)	8.7%	7.5%	16.3%	7%	2%	1.3%	12.7%	0.11%	
2	Mandalay	(N)	150	200	200	200	400	332		11855	1482
		(%)	5.3%	4%	11.5%	6.5%	1%	0.6%		0.19%	
3	Meikthila	(N)	150				400		150		700
		(%)	4.7%				1%		6%		
4	Taunggyi	(N)	150	200	105		400				855
		(%)	8.7%	8%	6.7%		1.5%				
5	Lashio	(N)	135	127	200		400				862
		(%)	3%	3.9%	22%		0.8%				
6	Tachileik	(N)	136	200	152		400		97		985
		(%)	3.7%	9%	17.8%		1%		10.3%		
7	Muse	(N)	150		200		400				750
		(%)	10%		17%		0.8%				
8	Dawei	(N)	150				400		150		699
		(%)	3.3%				0.8%		2.7%		
9	Kawthoung	(N)	150				400				550
		(%)	4%				0.5%				
10	Myitkyina	(N)	110	105	200		398				813
		(%)	5.5%	12.4%	29%		0.8%				
11	Bahmo	(N)	150				400		127		676
		(%)	1.3%				1.3%		19%		
12	Mawlamyine	(N)	150	200			400		150		900
		(%)	4%	3.5%			0.8%		10.7%		
13	Patheingyi	(N)	106	200		164	400		150		1020
		(%)	14.2%	15%		21.3%	1%		12%		
14	Bago	(N)	150				400		150		700
		(%)	4.7%				0.8%		7.3%		
15	Pyaw	(N)	150	200			400		150		900
		(%)	3.3%	3%			1%		8.7%		
16	Magway	(N)	150				400		150		700
		(%)	3.3%				0.3%		4.7%		
17	Hpa-an	(N)	150				400		150		700
		(%)	2.7%				0.3%		12%		
18	Sittwe	(N)	150				400		107		657
		(%)	2.7%				0%		0.9%		

National AIDS Programme

Sr. no.	Sentinel site		Sentinel Groups								Total
			Male STI	FSW	PWID	MSM	Preg women	Military Recruits	New TB	Blood Donor	
19	Monywa	(N)	150	152		199	400		143		1044
		(%)	5.3%	5.3%		3%	0.8%		12.6%		
20	Loikaw	(N)	150				400		140		690
		(%)	6.7%				0.8%		13.6%		
21	Hakha	(N)	150				400				550
		(%)	0.7%				0.5%				
22	Hinthada	(N)	150				400		150		700
		(%)	9.3%				1%		10%		
23	Maubin	(N)	150				400		150		700
		(%)	0.7%				0.3%		11.3%		
24	Myeik	(N)	150				400		150		700
		(%)	3.3%				0.5%		6.7%		
25	Myingyan	(N)	150				399		150		699
		(%)	0%				0.3%		18.7%		
26	Pakkoku	(N)	150				400				550
		(%)	2.7%				0.5%				
27	Shwebo	(N)	150				400		92		642
		(%)	2%				0.8%		8.7%		
28	Kengtung	(N)	130				400		66		596
		(%)	3.8%				0.8%		10.6%		
29	Myawaddy	(N)	150				400				550
		(%)	6.7%				1.5%				
30	Nyaung-U	(N)	67				399		150		616
		(%)	0%				0%		7.3%		
31	Myaungmya	(N)	150				400		150		700
		(%)	2.7%				0.8%		7.3%		
32	Taunggo	(N)	150				400		110		660
		(%)	2.7%				0.5%		5.5%		
33	Pyinoolwin	(N)	150				399		115		664
		(%)	1.3%				0%		10.4%		
34	Pyinmana	(N)	150				400		52		602
		(%)	1.3%				0.8%		9.6%		
35	Kale	(N)	150				400				550
		(%)	0.7%				0.8%				
	Total		5034	1784	1217	763	13995	732	3296		26821

National AIDS Programme

7.2. Annex 2: HIV prevalence by age groups, HSS 2012

Age group	Male STI patients			FSW			PWID			MSM		
	sample	HIV (+)ve	%	sample	HIV (+)ve	%	sample	HIV (+)ve	%	sample	HIV (+)ve	%
15-19 yr	395	4	1%	356	12	3.4%	68	5	7.4%	167	1	0.6%
20-24 yr	1086	23	2.1%	579	43	7.4%	263	39	14.8%	255	18	7.1%
25-29 yr	1257	60	4.8%	372	38	10.2%	295	56	19%	155	18	11.6%
30-34 yr	954	56	5.9%	213	18	8.5%	253	48	19%	69	11	15.9%
35-39 yr	683	34	5%	134	7	5.2%	159	33	20.8%	44	9	20.5%
40-44 yr	394	16	4.1%	89	6	6.7%	119	30	25.2%	40	6	15%
45-49 yr	173	5	2.9%	34	2	5.9%	38	4	10.5%	19	3	15.8%
≥ 50 yr	92	6	6.5%	7	0	0%	22	4	18.2%	14	2	14.3%
Total	5034	204	4.1%	1784	126	7.1%	1217	219	18%	763	68	8.9%

Age group	Pregnant women			New Military Recruits			New TB patients			Blood Donors		
	sample	HIV (+)ve	%	sample	HIV (+)ve	%	sample	HIV (+)ve	%	sample	HIV (+)ve	%
15-19 yr	1148	4	0.3%	229	0	0%	147	1	1%	4053	2	0.05%
20-24 yr	3756	31	0.8%	401	4	1%	289	10	3.5%	8809	13	0.15%
25-29 yr	3955	37	0.9%	98	3	3.1%	368	38	10.3%	5948	8	0.13%
30-34 yr	3007	20	0.7%	4	0	0%	401	90	22.4%	3898	3	0.08%
35-39 yr	1589	7	0.4%				373	76	20.4%	2933	8	0.27%
40-44 yr	492	3	0.6%				347	38	11%	2331	4	0.17%
45-49 yr	48	0	0%				337	30	8.9%	1482	6	0.40%
≥ 50 yr							1034	34	3.3%	1130	0	0%
Total	13995	102	0.7%	732	7	1.0%	3296	317	9.6%	30584	44	0.14%

7.3. Annex 3: Prevalence of syphilis (VDRL+) by sentinel population and by sites, HSS 2012

Sr. no.	Sentinel site		Sentinel Groups						
			Male STI	FSW	PWID	MSM	Preg women	Military Recruits	Total
1	Yangon	(N)	150	200	160	200	400	400	1510
		(%)	14.7%	8.5%	2.5%	5%	1.8%	2.3%	
2	Mandalay	(N)	150	200	200	200	400	332	1482
		(%)	0.7%	0%	0.5%	0%	0%	0.6%	
3	Meikthila	(N)	150				400		550
		(%)	0%				0.3%		
4	Taunggyi	(N)	150	200	105		400		855
		(%)	5.3%	5%	1.9%		0.5%		
5	Lashio	(N)	135	127	200		400		862
		(%)	0.7%	0%	1%		0%		
6	Tachileik	(N)	136	200	152		400		888
		(%)	2.9%	3%	3.9%		0.5%		
7	Muse	(N)	150		200		400		750
		(%)	0.7%		0.5%		0.3%		
8	Dawei	(N)	150				400		550
		(%)	0.7%				0%		
9	Kawthoung	(N)	150				400		550
		(%)	0%				0%		
10	Myitkyina	(N)	110	105	200		398		813
		(%)	0%	3.8%	0%		0.8%		
11	Bahmo	(N)	150				400		550
		(%)	0%				0%		
12	Mawlamyine	(N)	150	200			400		750
		(%)	4%	3.5%			0.3%		
13	Patheingyi	(N)	106	200		164	400		870
		(%)	4.7%	6.5%		6.1%	0%		
14	Bago	(N)	150				400		550
		(%)	3.3%				0.5%		
15	Pyaw	(N)	150	200			400		750
		(%)	1.3%	0%			0%		
16	Magway	(N)	150				400		550
		(%)	12%				0.3%		
17	Hpa-an	(N)	150				400		550
		(%)	1.3%				0%		
18	Sittwe	(N)	150				400		550
		(%)	0%				0.5%		

National AIDS Programme

Sr. no.	Sentinel site		Sentinel Groups						Total
			Male STI	FSW	PWID	MSM	Preg women	Military Recruits	
19	Monywa	(N)	150	152		199	400		901
		%	4.7%	6.6%		2.5%	0%		
20	Loikaw	(N)	150				400		550
		%	0.7%				0.8%		
21	Hakha	(N)	150				400		550
		%	2.7%				0.8%		
22	Hinthada	(N)	150				400		550
		%	3.3%				1%		
23	Maubin	(N)	150				400		550
		%	0.7%				0%		
24	Myeik	(N)	150				400		550
		%	0.7%				0.3%		
25	Myingyan	(N)	150				399		549
		%	2.7%				0%		
26	Pakkoku	(N)	150				400		550
		%	0%				0%		
27	Shwebo	(N)	150				400		550
		%	2.7%				0.5%		
28	Kengtung	(N)	130				400		530
		%	3.8%				0.8%		
29	Myawaddy	(N)	150				400		550
		%	0.7%				0.5%		
30	Nyaung-U	(N)	67				399		466
		%	0%				0%		
31	Myaungmya	(N)	150				400		550
		%	9.3%				0.8%		
32	Taunggo	(N)	150				400		550
		%	6.7%				0%		
33	Pyinoolwin	(N)	150				399		549
		%	6.0%				0.3%		
34	Pyinmana	(N)	150				400		550
		%	1.3%				0%		
35	Kale	(N)	150				400		550
		%	1.3%				0.3%		
	Total		5034	1784	1217	763	13995	732	23525